

**Work Assignment 4-3  
Statement of Work**

**TITLE:** Statistical and Technical Support for Fish Advisory Analyses

**Period of Performance:** June 1, 2014 through May 31, 2015

**Work Assignment Contracting Officer's Representative (WA COR):**

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**Contract PWS:** Sections A, B.7, C. 1, C.4, C.5

**1. Background and Purpose**

This work assignment (WA) provides for statistical and technical support related to the EPA projects involving the updates to the reports and manuscript titled Time-Trends in NHANES Blood Mercury, new trends analyses and reports on PCBs, PBDEs and PFOS/PFOA, and developing national guidance documents providing recommended approaches to conducting surveys to assess the awareness and effectiveness of local fish consumption advisories and conducting fish consumption surveys.

## **2. Tasks**

### Task 1: Develop a Work Plan

The contractor shall prepare a work plan and cost estimate (by task) for the tasks in this WA, including proposed level of effort, budget, and a schedule of tasks and submit it to the Contracting Officer (CO), Contract Level Contracting Officer's Representative (CL COR), and Work Assignment Contracting Officer's Representative (WA COR) in accordance with contract requirements. If needed, the contractor shall hold a conference call with the WA COR prior to submission of the work plan to discuss any issues needing clarification related to the work plan.

### Task 2: Quality Assurance

The contractor shall use the Quality Assurance Project Plan (QAPP) developed under WP 3-3 with the following information included in an addendum:

1. Update the QAPP for new work covered under this work assignment (e.g., new Blood mercury regional/coastal analyses and analyses of PBDEs, PFOS/PFOA and PCBs).
2. Provide an explanation of QA to be performed to ensure the usability and accuracy of the data for its intended purposes.
3. Provide an explanation of the independent function of the project QA officer and how QA will be performed independently.

Additionally, the QAPP must be updated to show the inclusion of the addendum and a QAPP revision history page to be included following the signature page.

The contractor shall ensure and document all activities in accordance with Agency guidance and in compliance with EPA metadata standards.

All deliverables shall include a summary describing compliance with the QAPP. The contractor shall ensure: (1) the products developed under this work assignment comply with the Information Quality Guidelines (IQG) and (2) the IQG checklist is completed for each deliverable, with all supporting documentation for each checklist item, before the final materials are produced.

### Task 3: NHANES and Related Statistical Analyses: Mercury, PFOS, PBDEs and PCBs Analysis

- Based on comments provided by the WAM and the NHANES 2011-12 survey cycle, the contractor shall revise and update the document and manuscripts titled Time-Trends in NHANES Blood Mercury and Time-Trends in NHANES PFOS and Arsenic Data (developed by the contractor under previous work assignment 3-3). The contractor shall expand the analyses to include regional and coastal county analysis.
- Using the same methodology applied to develop the NHANES based blood-mercury trends analysis, develop trends analyses for PFOS, PBDEs and PCBs. Where possible and appropriate, the NCI (modified) approach should be used to analyze the NHANES data.
- Additional related analyses associated with NHANES, fish consumption and/or chemical levels in fish and/or humans.

#### Task 4: Development of Guidance on Assessing the Effectiveness of Rural Advisories

As a continuation of work initiated as part of the previous WA 3-3 under the same contract, the contractor shall develop national guidance on assessing the awareness and effectiveness of local fish consumption advisories for use by states, tribes and others responsible for issuing and managing advisories.

Specific areas of support include:

- Based on the survey instrument titled Recommended Study Design for a Survey to Evaluate the Effectiveness of Mississippi Delta Fish Advisories and the final report titled Survey Evaluating Effectiveness of Mississippi Delta Fish Advisories (see <http://water.epa.gov/scitech/swguidance/fishshellfish/fishadvisories/technical.cfm>), the contractor shall develop a national guidance document providing a recommended approach to conducting surveys to assess the awareness and effectiveness of local fish consumption advisories in rural areas of the U.S. Additionally, the document will provide specific and expanded guidance on conducting surveys on small populations (e.g., tribes or villages) and or waterbodies (e.g., lakes, river segments). The revised guidance will include a default model survey useful and cost effective by states and tribes for gathering local data and information. The guidance will include procedures for modifying the default survey instrument to meet local needs.
  - Telephonic meetings with EPA will be organized by the contractor and held monthly.
  - The contractor shall provide written summaries for each meeting. We estimate the contractor will participate in and provide summaries for 12 meetings, one per month through May 2015.

### Task 5: Development of Guidance on Conducting Fish Consumption Surveys

As a continuation of work initiated as part of the previous WA 3-3 under the same contract, the contractor shall develop national guidance on conducting fish consumption surveys for use by states, tribes and others responsible for issuing and managing advisories and WQS programs.

Specific areas of support include:

- Revise the current EPA guidance titled Guidance for Conducting Fish and Wildlife Surveys (see [http://water.epa.gov/scitech/swguidance/fishshellfish/outreach/upload/1999\\_11\\_05\\_fish\\_fishguid.pdf](http://water.epa.gov/scitech/swguidance/fishshellfish/outreach/upload/1999_11_05_fish_fishguid.pdf)). The contractor shall develop a revised national guidance document providing a recommended approach to conducting local and regional surveys to determine fish consumption rates for various populations and geographic areas of the U.S. Based on the most current science, public health policies and directions from the WAM, the revised guidance will include revisions to all topics addressed in the current guidance as well as detailed data needs and statistical procedures required for calculating fish consumption rates. The document will provide specific and expanded guidance on conducting surveys on small populations (e.g., tribes or villages) and or waterbodies (e.g., lakes, river segments). The revised guidance will include a default model fish consumption survey useful and cost effective by states and tribes for gathering local fish consumption data and information. The guidance will include procedures for modifying the default survey instrument to meet local needs.
- Specific qualified expertise: The development of the guidance document requires a qualified subject matter expert in the development and conduct of fish consumption rate surveys for small subpopulations, including Native American and Alaskan Villagers.
- Telephonic workgroup meeting will be organized by the contractor and held monthly.
  - The contractor shall provide written summaries for each meeting. We estimate the contractor will participate in and provide summaries for 6 meetings, one per month through November, 2014.

### **3. Schedule and Deliverables**

All final reports shall be provided to the WA COR in electronic and paper formats, including one (1) CD per deliverable provided in PDF format; one (1) CD per deliverable in original software (all software shall be cleared by the WA COR prior to use); one (1) camera-ready copy of each product (unless otherwise

requested); and four (4) bound paper copies of all reports. All documents shall be web-ready format and 508 compliant. Meeting summaries shall be provided via email to the WA COR.

The contractor shall certify in writing for each product that all electronic and paper copies are identical mirror images.

#### Task 1: Work Plan

**Deliverable 1:** The work plan shall be submitted electronically in MS WORD to the WA COR, Alternate WA COR, and CO in accordance with the contract requirements.

#### Task 2: Quality Assurance

**Deliverable 2:** Final QAPP will be due 2 weeks before WP completion. The IQG checklist shall be due at the completion of each final deliverable required by the WA.

#### Task 4: NHANES Fish Consumption/Contaminant Analysis

**Deliverable 6:** Submit draft of the reports and manuscripts on Time within 40 work days of publishing the relevant new NHANES data by CDC.

**Deliverable 7:** Submit final reports within 10 work days of receipt of WA COR and/or peer review comments. The contractor shall provide copies of the final report as described above under Section 3 as well as four hard copies to the COR.

#### Task 5: Development of Guidance on Assessing the Effectiveness of Rural Advisories

**Deliverable 8:** Summaries of the monthly meetings shall be provided within 24 hours of each meeting, or 8 working hours. If a meeting is held on a Friday, the summary will be provided on Monday.

**Deliverable 9:** Submit draft of report of guidance within 100 work days of receipt of approved work plan.

**Deliverable 10:** Submit a final report within 25 work days of receipt of WA COR and/or peer review comments. The contractor shall provide copies of the final report as described above under Section 3 as well as four hard copies to the COR.

#### Task 6: Development of Guidance on Conducting Fish Consumption Surveys

- Deliverable 11:** Summaries of the monthly meetings shall be provided within 24 hours of each meeting, or 8 working hours. If a meeting is held on a Friday, the summary will be provided on Monday.
- Deliverable 12:** Submit draft of report of guidance within 120 work days of receipt of approved work plan.
- Deliverable 13:** Submit a final report within 25 work days of receipt of WA COR and/or peer review comments. The contractor shall provide copies of the final report as described above under Section 3 as well as four hard copies to the COR.

#### **4. Reporting Requirements**

The contractor Work Assignment Lead will maintain liaison with the WA COR either by phone or via email weekly throughout the duration of the WA.

The contractor shall prepare monthly technical and financial progress reports, monitor the budget, monitor the schedule, and administer the WA through its completion. The monthly progress report will include technical and financial components. The report will state the progress made for the reporting period, including the percentage of the WA completed and a description of work accomplished to support the cost. Specific discussions about problems encountered, remedial actions taken, anticipated activity for the subsequent reporting period, and a schedule of deliverables for the upcoming month will be included. A list of outstanding actions awaiting authorization will also be included. The financial information will include monthly costs, cumulative costs, and hours worked for each employee within labor categories.

#### **5. Notice Regarding Guidance Provided Under This Work Assignment**

Guidance is strictly limited to technical and analytical support. The contractor shall not engage in activities of an inherently governmental nature such as the following:

1. Formulation of Agency policy;
2. Selection of Agency priorities;
3. Development of Agency regulations.

Performance Work Statement  
Contract EP-C-10-023  
Work Assignment 4-6

**TITLE: Statistical Support for Steam Electric Effluent Guidelines**

**Period of Performance: June 1, 2014 through May 31, 2015**

**Work Assignment Contracting Officer's Representative (WACOR):**

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**A. BACKGROUND**

The steam electric power generating effluent limitations guidelines and standards (ELGs) apply to the electric power plants that generate electricity for distribution and sale from a process utilizing fossil-type fuel (coal, oil, or gas) or nuclear fuel in conjunction with a thermal cycle employing the steam-water system as the thermodynamic medium. The effluent guidelines are codified in the Code of Federal Regulations (CFR) at Title 40, Part 423 (40 CFR Part 423). EPA's most recent revisions to the effluent guidelines for this industry sector were promulgated in 1982 (see 47 Fed. Reg. 52290; November 19, 1982).

EPA first identified this industry as ranking high in discharge of toxic and nonconventional pollutant [U.S. EPA, 2005b] during its 2005 annual review of effluent guidelines as required in section 304 (m) of the Clean Water Act. Because of these findings, EPA initiated a more detailed study of this category to determine if the effluent guidelines should be revised. Upon completing the detailed study in 2009, EPA determined that the current regulations have not kept pace with the significant changes that have occurred in this industry since they were last revised in 1982. Thus, EPA determined that revising the current effluent guidelines for this industry is warranted.

To revise the current steam electric power generating effluent limitations guidelines, EPA determined that an Information Collection Request (ICR) was necessary. EPA published the first Federal Register notice about the questionnaires on October 29, 2009, and the second Federal Register notice about the questionnaires on March 9, 2010. The ICR was approved by Office of Management and Budget on May 20, 2010. The questionnaires were sent to the selected power plants in June 2010.

The proposed effluent guidelines for steam electric rule was published for comments in June, 2013, and the public comment for the proposed rule ends on September, 2013. EPA expects to finalize this rule by 2015.

## **B. PURPOSE**

The Contractor shall provide support for EPA in its evaluation of public comments and data submitted on the proposed rule. Specifically, the contractor will provide support in areas including statistical analysis of physical sampling data, review of the statistical comments, and statistical documentation to support the final rulemaking.

## **INFORMATION TO BE PROVIDED**

The contractor already has the detailed documentation of the statistical sample design of the questionnaires, sample frame database which does not contain CBI, a list of a sample draw with base weights, list of final survey weight, sampling database that was used to set the numeric limits for the proposed rulemaking under WA B-1, WA 1-6, WA 2-6, and WA 3-6. The EPA WACOR will provide the statistical comments (and additional sampling data) at the time of the technical direction.

## **C. GENERAL REQUIREMENTS**

In providing support under the tasks described in Section V, the contractor also shall adhere to the following general requirements:

### **Databases and Computer programs (PWS B.4)**



The contractor shall ensure that the updated databases, computer programs and the corresponding documentation developed under this contract are accessible to the EPA Contract Level Contracting Officer's Representative and the EPA WACOR. The contractor shall use software packages that are relevant to particular statistical analysis, generally acceptable by experts as being reliable for the statistical analysis, and allow for any necessary data modification. The program shall identify the origin of the input data sets (e.g., version X supplied by EPA on specific date). (See PWS B.4).

#### **Deliverable (PWS B.5)**

The contractor shall provide documentation in computer files, and in hardcopy, upon specific request. When appropriate (e.g., in a report rather than data listing), the contractor shall clearly specify the methods, procedures, considerations, assumptions, relevant citations, data sources, and data that support the results and any recommendations. The contractor also shall document alternative methods, procedures, and assumptions that the contractor considered in the statistical analysis. Further, the documentation shall be labeled with the name of the contractor and the EPA contract number. (For example, a memorandum explaining the results of a statistical analysis shall be placed on company letterhead and the subject line will include the phrase 'EPA Contract EP-C-10-023'.)

The contractor shall ensure that documentation is created using, or easily converted to, Agency standard software formats (e.g., Microsoft Office) to facilitate EPA use and review.

#### **Confidential Business Information (PWS B.6)**

The contractor will be provided with technical information as determined by the EPA WACOR who will also coordinate the transfer of all information. Some of the information provided by EPA will be Confidential Business Information (CBI). After receiving CBI, the contractor shall handle and analyze CBI under procedures specified in the approved contract CBI security plan and developed under WA B-1, and 40 CFR Part 2 Subpart B, and in accordance with contract requirements and limitations (see Section H of the contract).

#### **Identification at Meetings (PWS C.6)**

At meetings with EPA, the contractor shall state that he/she represents a contractor working for EPA, and wear clear identification identifying his contractor affiliation. Further, the contractor shall prepare briefing materials that clearly indicate that they have been provided by a contractor working for EPA. (See contract PWS section C.6)

#### **Workplan**

The contractor shall prepare a detailed work plan covering the tasks in this work assignment.

#### **Quality Assurance Project Plan (QAPP)**

##### QA Project Plan Requirements

EPA policy requires that an approved Quality Assurance Project Plan (QAPP) be in place before any work begins that involves the collection, generation, evaluation, analysis or use of environmental data. This work assignment is a continuation of work previously performed by the contractor under WA 1-6 and WA 2-6, WA 3-6, and a QAPP was already prepared and approved by EPA to support work performed to support this project (see “Quality Assurance Project Plan For the Steam Electric Rulemaking Statistical Support v1.0”, dated 8/15/2011).

The tasks covered by this continuation work assignment are indicated in the Effluent Guidelines Development Process flowchart for the effluent guidelines development process (see flowchart in Attachment A, steps 7, 11, 15), which were also included in the precursor to this work assignment (i.e., WA 3-6). To ensure that all activities performed under this work assignment are compliant with EPA’s quality system requirements, the Contractor shall adhere to the previously approved QAPP **and**:

- The Contractor shall review the previously approved QAPP to verify that the QAPP adequately documents how quality assurance (QA) and quality control (QC) will be applied to all activities to be performed under this work assignment, including the new steps in the effluent guidelines development process listed above. As part of this review, the Contractor shall also verify that existing QAPP content (e.g., organizational charts, roles and responsibilities, QA/QC procedures, checklists, SOPs, etc.) are still appropriate for the work to be performed under this work assignment for previously identified steps in the effluent guidelines process that will continue to be supported under this work assignment. In addition, the contractor shall verify that the QAPP:
  - Addresses all activities involving the **generation** (including field studies, laboratory studies, and modeling output), **collection** (including surveys, literature searches, and third party data), **evaluation** (including data inspection, review, assessment, and validation), **analysis** (including statistical, engineering, and economic analysis and testing, evaluation, and validation of methods and models) **and use of data** to support EPA decisions, regulations, policy, publications or tools (including effluent guidelines, methods, criteria, standards, environmental assessments, and models, tools, or reports disseminated by EPA to assist other organizations in implementing environmental programs). Examples of data include, but are not limited to, wastewater sample analysis results, flow measurements or data, facility questionnaire data, economic data, use of models, secondary data (including sources and the acceptance criteria), any software and database management requirements and any other relevant work that might affect the quality of the data. Note that QAPPs are also required for the development or revision of models and software that support the generation, collection, evaluation, analysis or use of data. For example, when existing models are used as a tool to generate or evaluate data, the project QAPP must describe the model, how it will be used, and how the model output will be evaluated to ensure it meets the overall quality objectives for the project. However, development or revision of new models also must be supported by a QAPP that describes the objectives for the model, the quality criteria that will be applied to the model, and the procedures for evaluating whether the model meets those criteria.
  - Provides enough detail to clearly describe objectives of the project supported by the work assignment; the type of data to be collected, generated, or used under this work assignment to support the project objectives; the quality objectives needed to ensure that

these will support the project objectives; and the quality assurance and quality control activities to be performed to ensure that any results obtained are documented and are of the type, quality, transparency, and reproducibility needed.

- Includes specific performance criteria and measures that will be used to verify that data generated, collected or used in this work assignment meet those criteria. If a database or other electronic tool (e.g., model, spreadsheet, etc.) will be created for the project, the QAPP must describe how the database or electronic tool will be documented (e.g., data element dictionary, user manual, SOP, or other means appropriate for the project), the controls to ensure accurate data entry (when data from another source are manually entered into the database), data transfer (when data are transferred from one electronic medium to another), or data merging (when data from multiple databases or electronic media are merged into a single database).
- Explicitly references tools, such as SOPs, checklists, and guidelines that the contractor will use in the project to document data quality. The QAPP must include the tools as attachments for EPA's review and acceptance.
- Addresses the following “general questions that are applicable to all QAPPs that support EAD effluent guidelines projects”:
  - What is the objective/goal of this effort?
  - What are the roles and responsibilities of staff who will support this project, and how do they relate to the specific key steps?
  - What training and competency requirements are necessary for key personnel that will support the project?
  - If models will be used to support the project, what are these models, why have they been selected, and how will they be validated, documented, and used?
  - What are the SOPs, tools and checklists that will be used?
- If **minor** changes are needed to the existing QAPP, the Contractor shall submit a revised QAPP to EPA within 10 days after submittal of the workplan. This revised QAPP shall include a version history page that summarizes the changes made. The Contractor also shall provide EPA with copies of any modified SOPs or checklists. EPA will review the revised QAPP and provide the Contractor with written approval or comments within 15 days of receiving the Contractor's submission. The Contractor shall revise the submitted QAPP within 7 days of receipt, unless otherwise instructed by the EPA WACOR.
- If **major** changes are needed to the existing QAPP, the Contractor shall submit a revised QAPP to EPA within 15 days after submittal of the work plan. When preparing this revised version, the Contractor shall ensure that it is written in an active voice and shall include a version history page that summarizes changes made. The Contractor also shall provide EPA with copies of any modified SOPs or checklists. EPA will review the revised QAPP and provide the Contractor with written approval or comments within 15 days of receiving the Contractor's submission. The Contractor shall revise the submitted QAPP within 10 days of receipt, unless otherwise instructed by the EPA WACOR.
- **Under no circumstances shall work that involves the generation, collection, evaluation, analysis, or use of environmental data be performed without an approved QAPP in place 50 days after submission of the Contractor's work plan.**
- Under no circumstances shall field sampling or laboratory analysis activities be conducted prior to receipt of an approved work plan.

- Any non-sampling/non-analytical work that involves the generation, collection, evaluation, analysis, or use of environmental data that is initiated prior to approval of the Contractor's QAPP must be performed in accordance with the approved QAPP. (The QAPP requirements must be applied retroactively to this period that lasts no more than 50 days from submission of the Contractor's work plan.).

#### Data Quality Act/Information Quality Guidelines Requirements

The Data Quality Act (also known as the Information Quality Act) requires EPA to ensure that influential information disseminated by the Agency is sufficiently transparent in terms of data and methods of analysis that the information is capable of being substantially reproduced. To support compliance with these data transparency/data reproducibility requirements, EPA plans to include QAPPs as part of any rulemaking record documentation to be made available to the public. The Contractor may claim information in QAPPs as confidential; if the Contractor chooses to do so, the Contractor shall submit a sanitized (i.e., public) version and an unsanitized (i.e., confidential) version at the time the QAPP is submitted for approval by EPA. The sanitized version will be included in the public docket for the applicable rulemaking (or other docket or record), and the unsanitized version will be included in a non-public (i.e., confidential) portion of the docket (or record).

Information contained in the approved QAPP must be transparent and reproducible and meet the requirements of the Data Quality Act for influential information. EPA's Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity, of Information Disseminated by the Environmental Protection Agency (EPA/260R-02-008, October 2002), referred to as "EPA's Information Quality Guidelines," describe EPA procedures for meeting Data Quality Act requirements. Section 6.3 of EPA's Information Quality Guidelines indicate that "especially rigorous robustness checks" should be applied in circumstances where quality-related information cannot be disclosed due to confidentiality issues. Where applicable, the Contractor should indicate which results were obtained using the tools (SOPs, checklists, and guidelines) that the Contractor designates as confidential so that the EPA WACOR can easily identify the areas that will require rigorous robustness checks and document that those checks have been performed. At the discretion of the EPA WACOR, the Contractor may be requested to prepare pre-dissemination review checklist as described in Section 5.5 of the Office of Water Quality Management Plan, February 2009. If this is required, the EPA WACOR will notify the Contractor through written technical direction.

#### Additional QA Documentation Required

In addition to the QAPP requirements described above, all major deliverables (e.g., Technical Support Documents, Study Reports, Study Plans, etc.) produced by the Contractor under this work assignment must include a discussion of the QA/QC activities that were or will be performed to support the deliverable. For example, a Technical Support Document or Study Report must include a clear discussion of the quality management strategies that were employed to control and document the quality of data generated and used.

The contractor also shall provide EPA with monthly reports of QA activities performed during implementation of this work assignment. These monthly QA reports shall identify QA activities

performed to support implementation of this work assignment, problems encountered, deviations from the QAPP, and corrective actions taken. If desired, the contractor may include this as a part of the contract-required monthly financial/technical progress report.

#### **D. Statistical Support**

The EPA WAM will provide technical clarification/directives regarding the tasks of the work assignment listed below through written technical directives.

##### **Task 1: Statistical Analyses of Data from Physical Sampling (PWS C.2)**

The contractor shall perform statistical analysis to assess wastewater concentrations from power plants and related variables. The data supporting the final rule will include some, or all, of the data that the contractor used in supporting the proposed rule. In addition, the EPA WACOR will provide access to data collected since the proposal. It is expected that the contractor will continue to use and modify the computer programs developed for the proposed rule in analyzing the data specified by the EPA WACOR. In support of the final rule, the contractor shall provide:

- **Meeting:** The contractor shall participate in meetings with EPA to discuss objectives and approaches. (The EPA WACOR will coordinate with the contractor and project team members to determine meeting times.) Within three business days of each meeting, the contractor shall provide a short memorandum describing EPA's objectives and statistical considerations addressed at the meeting. The contractor shall assume that there will be two meetings.
- **Data Quality:** The contractor shall evaluate the data quality and integrity for additional sampling data since the proposal. The contractor shall identify outliers and questionable data by reviewing data listings and summaries, applying statistical methods, and using graphical methods. The contractor also shall review the data for missing values, censoring patterns, and appropriate units of measure (e.g., milligrams/liter). The contractor shall immediately notify the EPA WACOR of any deficiencies and/or concerns about the data quality, integrity, and completeness that require EPA resolution.
- **Methodologies:** The contractor shall provide memoranda describing and evaluating the appropriateness of various statistical methodologies for analyzing the sampling data. With the results of the statistical analyses, the contractor shall provide memoranda that clearly specify the methods, procedures, assumptions, relevant citations, data sources, and data that support the results and recommendations. The contractor also shall document alternative methods, procedures, and assumptions that the contractor considered in the statistical analysis. For all memoranda, the contractor shall provide revisions that incorporate comments from the EPA WACOR.
- **Programs and Databases:** The contractor shall provide summary statistics, percentile estimates, graphical analyses, diagnostic evaluations of estimates, and assessment of the variability of the data. The contractor shall provide the statistical programs and databases upon request. The contractor also shall provide appropriate documentation that will show the relationship between the programs and databases (e.g., flowcharts).

## **Task 2: Statistical Review of Documents and Response to Public Comments Support for the Proposed Rulemaking (PWS C.4)**

The Contractor shall provide statistical review and comments on documents specific to Steam Electric. These documents will be provided to the Contractor by the EPA WACOR. EPA may obtain these documents from sources such as OW, other EPA Offices, EPA Regions, States, other government agencies including OMB, industry reports, and professional journals. The EPA WACOR will also provide written technical direction with regard to the focus of the reviews. The contractor shall provide a preliminary assessment in an email message or memorandum within 5 business days after receiving the documents. The final in-depth review in memoranda or reports shall be provided by the contractor within 1 to 3 weeks after receiving the written technical direction.

The contractor shall provide technical support to EPA's efforts to respond to public comments received on the proposed rule. This support may include, but not limited to, the following activities: reviewing, assessing, and drafting responses. Responses may consist of individual comment responses, or they may be in the form of essays that address major issues or frequently stated comments.

## **Task 3: Record Materials (PWS B.8, C.5)**

The contractor shall provide between 3-5 written reports and documentation suitable for the final rulemaking record, with regard to the data, methods, and conclusions pertinent to the other items under this Statistical Support, in response to the written technical direction of the EPA WACORM. The contractor shall provide public documents (e.g., memoranda explaining the results of a statistical analysis) in a format acceptable to the regulations.gov website (e.g., Section 508 compliant pdf files). The contractor also shall provide CBI materials in a format specified by the EPA WAM. The contractor also shall provide an index for the record documents. The contractor should assume there will be two record documents.

## **Task 4: Miscellaneous Statistical Analyses (PWS C.1)**

The contractor shall provide additional statistical analyses, statistical review, and research relevant to steam electric project as specified by the EPA WACOR in written technical directives. With the results of the statistical analyses, the contractor shall provide memoranda that clearly specify the methods, procedures, assumptions, relevant citations, data sources, and data that support the results and recommendations. The contractor also shall document alternative methods, procedures, and assumptions that the contractor considered in the statistical analysis. For all memoranda and other materials, the contractor shall provide revisions that incorporate revised databases and comments from the EPA WACOR.

## E. Deliverables and Project Schedule

Task	Deliverable transmitted by email or file exchange	Date
General Requirement	Work plan	Due 15 days following receipt of Work Assignment.
Task 1 (Statistical Analyses of Data from Physical Sampling)	Meeting, teleconferences, and email	As necessary. Meeting notes within 3 business days.
	Data Quality	Within 1-3 business day after the contractor identifies a data issues.
	Methodologies	1 <sup>st</sup> draft one months after receiving data. Other drafts per technical direction.
	Programs and databases	5 business days after EPA determines that no additional revisions to the data analyses will be required
Task 2 (Statistical Review of Documents and Response to Public Comments Support for the Proposed Rulemaking)	Preliminary assessment for documents	Due 5-7 business days of receiving documents to review provided by the EPA WACOR
	Final review for documents	Within 1 to 3 weeks after receiving written technical direction (deadline depends on the complexity of the request). Revisions within 1 to 7 business days as specified in technical direction.
	Review, assess, and draft response to public comments received for the proposed rule	By written technical direction
Task 3 (Record Materials)	Record Materials and index	Exact dates to be specified in written technical direction.
Task 4 (Miscellaneous Statistical Analyses)	Draft Analyses	Within 1 to 3 weeks after receiving written technical direction (deadline depends on the complexity of the request)
	Final Version	Within 5 business days of receiving EPA comments

## F. TRAVEL

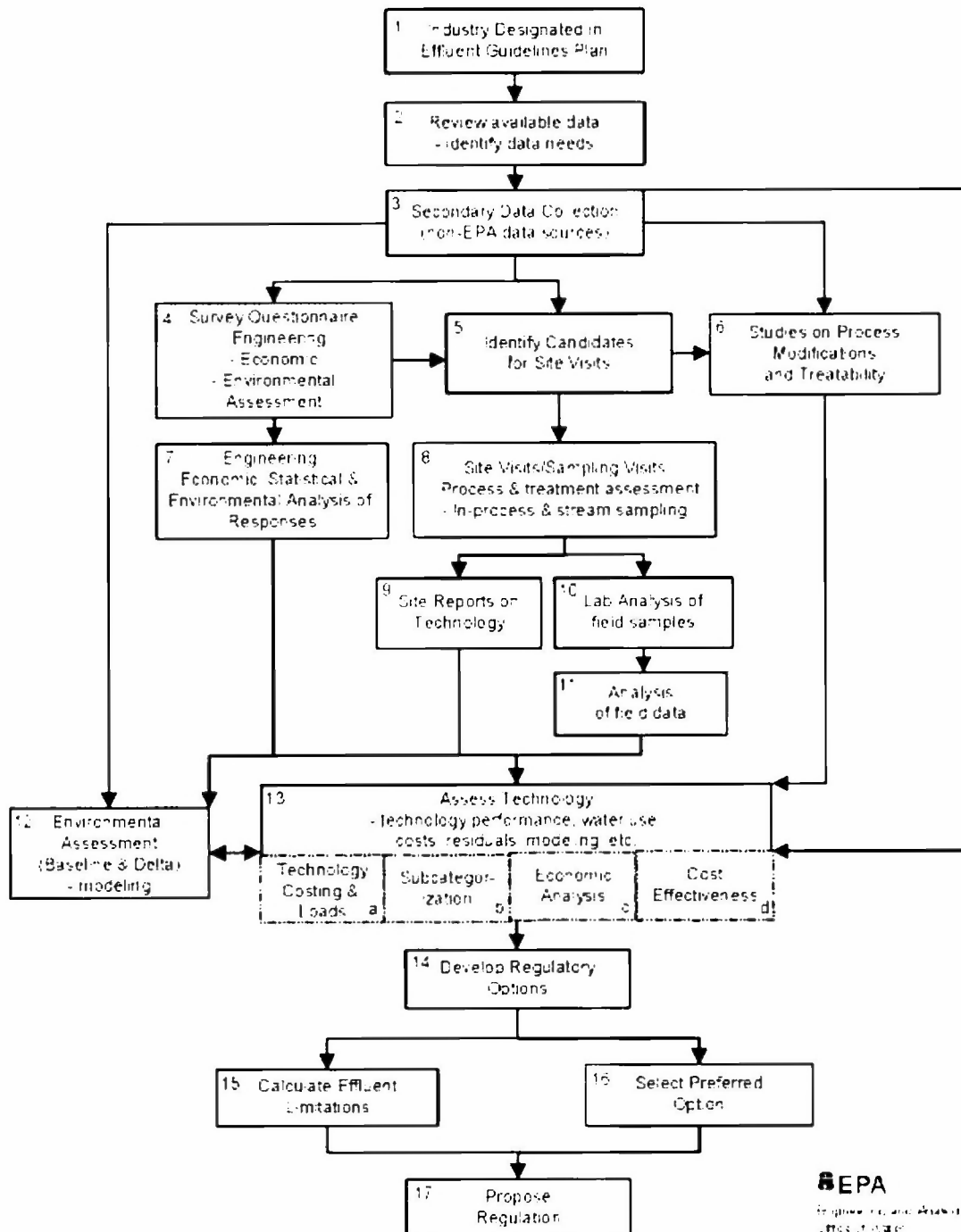
The contractor shall attend two meetings at EPA Headquarters. Any non-local travel directly chargeable to this work assignment shall be submitted and approved by the Contract Level Contracting Officer's Representative prior to the travel.

## G. OTHER REQUIREMENTS

The contractor shall provide written notification to the contracting officer, contract level contracting officer's representative, and work assignment contracting officer's representative when 75 percent of the hours and/or funds have been spent on this work assignment.

**Attachment A**  
**Effluent Guidelines Process Flowchart & QA Questions to be Asked at Each Step of the Process**

**Effluent Guidelines Development Process**



U.S. Environmental Protection Agency

**EPA**  
 Engineering and Assessment Center  
 Office of Water  
 October 2007



Performance Work Statement  
Contract EP-C-10-023  
Work Assignment 3-1

**TITLE: Quick Response Statistical Analysis Support**

**Period of Performance: June 1, 2013 through May 31, 2014**

**Work Assignment Manager:**

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**Alternate Work Assignment Manager (WAM):**

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## **I. BACKGROUND**

In order to fulfill its responsibilities within the Office of Water (OW), the Engineering and Analysis Division (EAD) is required to provide statistical analysis support for the promulgation of effluent guidelines, sewage sludge disposal regulations, water pollution control planning and management, water quality monitoring and analysis, determination of water quality criteria and EPA's toxic pollutant control strategy. The EAD also supports the Office of Science and Technology's (OST) interaction with other offices within OW and EPA in areas such as development and analysis of regulatory options and environmental research methodology. To effectively contribute to the execution of these responsibilities, the EAD and other OW statisticians must analyze large quantities of data. The magnitude of these responsibilities in

rapidly changing regulatory requirements makes it necessary for the EAD and OW to have a contractor with quick response capability to provide statistical analysis support services.

## **II. PURPOSE**

The contractor shall provide quick-response statistical analysis support for OW initiatives. The contractor shall provide support in areas including statistical analysis, statistical design of data collections, statistical review and comment, and statistical documentation.

The Contractor shall provide database maintenance activities on databases used in statistical analyses for on-going regulatory activities.

## **III. INFORMATION TO BE PROVIDED**

Data and supporting documentation will be provided to the contractor as required by the EPA Work Assignment Manager (WAM). This documentation will include survey data from specific industries, documentation from existing Agency databases, Agency technical support documents and written comments received by the Agency on proposed guidelines and standards.

The contractor will be provided with technical information as determined by the EPA WAM who will also coordinate the transfer of all information. Some of the information provided by EPA will be Confidential Business Information (CBI). The contractor shall handle CBI under procedures specified in an approved contract CBI security plan and 40 CFR Part 2 Subpart B, and in accordance with contract requirements and limitations. The contractor shall analyze CBI in accordance with contract requirements and limitations.

## **IV. GENERAL REQUIREMENTS**

In providing support under the tasks described in Section V, the contractor also shall adhere to the following general requirements:

### **1. Databases and Computer Programs**

The contractor shall design databases, computer algorithms, and programs that allow for efficient data analysis.

The databases shall contain metadata describing the variables, the origin of the data (e.g., EPA surveys), and other relevant documentation. The contractor shall incorporate data from multiple file formats into a single, logical database structure (e.g., a single SAS database with the same variable names used for similar data elements present in Excel, csv, and ASCII files

provided from different facilities). Because the Agency uses its mainframe (IBM z/OS) computer for version control of project databases, the contractor shall access the files using host-on-demand procedures described at <http://cfpub.epa.gov/ntsd/index.cfm?fuseaction=hod.main>.

The contractor shall use software packages that are relevant to the particular statistical analysis, generally accepted by experts as being reliable for the statistical analysis, and allow for any necessary data modification. The programs shall identify the origin of the input data sets (e.g., version X supplied by EPA on a specific date). (See contract PWS B.4)

## 2. Deliverables

Each initial deliverable shall be provided to the EPA WAM in draft form for review and comment. The contractor shall incorporate procedures to ensure that these drafts are reasonably free from errors and meet EPA's specifications before providing them to EPA. For example, drafts shall be reasonably free from errors generated by using inappropriate assumptions, inappropriate selection of data, logic problems in the computer programming, and incomplete documentation. The contractor shall incorporate EPA comments into revisions of the drafts.

When appropriate (e.g., in a report rather than a data listing), the contractor shall clearly specify the methods, procedures, considerations, assumptions, relevant citations, data sources, and data that support the results, evaluation and any recommendations. The contractor also shall document the reasons for selecting particular procedures, methodologies, and assumptions; and alternative methods, procedures, and assumptions that the contractor considered in developing the methodology or in the statistical analysis of environmental data. Additionally, the documentation shall be labeled with the name of the contractor and the EPA contract number. (For example, a memorandum explaining the results of a recommended methodological approach or statistical analysis shall be placed on company letterhead and the subject line will include the phrase "EPA Contract EP-C-10-023".)

The contractor shall ensure that documentation is created using, or can be easily converted to, Agency standard software formats (e.g., MicroSoft Office) to facilitate EPA use and review. In addition, to allow EPA to meet challenging deadlines, the contractor shall provide copies of interim databases, with periodic updates, rather than waiting until all of the data have been incorporated into the database. For example, when a database is being used for multiple purposes, EPA may assign database development to the statistical contractor and request interim versions to use for non-statistical evaluations. In another example, EPA may provide the statistical results and accompanying interim database to an industry trade group for assistance in identifying errors in the data. (See contract PWS B.5)

## 3. Identification at Meetings

At meetings with EPA, the contractor shall state that he/she represents a contractor working for EPA, and wear clear identification identifying his contractor affiliation. Further, the contractor shall prepare briefing materials that clearly indicate that they have been provided by a contractor working for EPA. (See contract PWS section C.6)

#### 4. Internal Documentation

The contractor shall internally document all assumptions, data sources, databases, procedures, statistical analyses, and computer programming code so that results can be replicated even if the originating staff members are no longer available. The contractor shall provide copies of this internal documentation upon request by the EPA Project Officer (PO) and the EPA WAM. (See contract PWS section B.8)

### **V. Scope of Work**

The EPA WAM will provide additional technical clarification/directives regarding the tasks of the work assignment listed below through written technical directives (except for tasks 1-3). Each initial deliverable shall be provided to the EPA WAM in draft form for review and comment. The contractor shall incorporate procedures into the deliverable to ensure that these drafts completely document the methodologies, use appropriate assumptions and data, result from correct computer logic and algorithms; are accurate, complete, and as specified in the work assignment or written technical direction before providing them to the EPA. The contractor shall incorporate the EPA WAM review comments into revisions of the drafts. All drafts and final reports shall be approved by the EPA WAM.

#### 1. Workplan

The contractor shall prepare a detailed work plan covering the tasks in this work assignment. The contractor must reference the QAPP in the work plan and state that it will be observed during the conduct of this work assignment and delineate the QA/QC procedures to be utilized when preparing non-environmental data work products.

#### 2. Quality Assurance

Most of the work under this work assignment are distinct one-time activities on unique EPA activities. There is no environmental data associated with this task that will require QAPP. If deemed necessary by EPA, the contractor shall develop 1-2 quality assurance project plans for quick response tasks when statistical analysis of environmental data is required.

#### 3. Contract Overview and Status Updates

The contractor shall participate in a half-day meeting, if requested, at EPA Headquarters in DC to discuss the contract, CBI requirements, QA expectations, and the requirements in this performance work statement. No more than three contractors should attend. In addition, the contractor shall provide informal periodic status updates.

#### 4. Analyze data using statistical procedures and methodologies

Upon written technical direction by the EPA WAM, the contractor shall determine and apply appropriate statistical procedures and methodologies in analyzing and interpreting environmental data provided by EPA. The data may include censored/truncated environmental data, data from chemical analyses of environmental samples (e.g., composite samples, soil samples), wastewater treatment system performance data, process and production evaluations, chemical analytical methods evaluations, surveys, and other sources. In providing this support, the contractor shall provide data summaries, memoranda, statistical programs, and associated databases. Also, the contractor shall participate in three half-day meetings at EPA Headquarters in DC. The contractor shall send 1-3 persons to the meetings. (See Contract PWS C.1.)

#### 5. Statistically design data collections

The contractor shall provide statistical designs and sampling plans for data collection activities. The contractor shall recommend designs, plans, and formats that will be effective in obtaining the desired information and data elements; can be readily analyzed and interpreted; allow for statistical inference; adhere to EPA precision requirements and budget constraints; and other EPA objectives. EPA will secure any approvals necessary for data collections under the Paperwork Reduction Act and will be responsible for collecting the data. Upon written technical direction to provide meta-analysis support, the contractor shall develop criteria to select studies and data that meet EPA's statistical and quality objectives, search for relevant documents (e.g., from literature searches), select those that meet the criteria, and perform the data extraction. (See Contract PWS C.2.)

#### 6. Evaluate data quality and integrity

Upon written technical direction to evaluate environmental data quality, integrity, and consistency, the contractor shall identify outliers and questionable data by reviewing data listings and summaries, applying statistical methods, and using graphical methods; shall review the data for missing values, censoring patterns, and appropriate units of measure (e.g., milligrams/liter); the contractor shall develop databases using procedures that will insure completeness and accuracy required by EPA (e.g., that 99 percent or more of the database entries match the original submissions.); and shall assess the consistency between relational

and mutually exclusive variables. (See Contract PWS C.3.) When performing work involving environmental data, upon written technical direction, the contractor shall prepare a QAPP.

7. Provide statistical review and comment

The contractor shall review and comment on documents provided by EPA to determine if they are statistically sound. Examples of documents include Agency draft documents, industry studies, technical reports, public comments on proposed regulations, journal articles, and Court briefs. The Agency will specify the depth of the review and comment, ranging from cursory reviews to detailed evaluations of each aspect of the statistical methodology and application to the data. The contractor shall prepare cogent, accurately written draft technical comments, critiques, and responses with relevant citations. The contractor also shall provide clearly written technical edits that improve statistical aspects of documents. (See Contract PWS C.4.)

8. Prepare statistical documentation

The contractor shall provide reports and documentation consistent with good statistical practice, statistical literature, and Plain Language concepts (described at [www.plainlanguage.gov](http://www.plainlanguage.gov)). EPA will specify the type of documentation, intended purpose, and target audience (e.g., general public, statisticians). Documentation includes outlines, data displays, summary reports, development documents, fact sheets, presentation materials, rulemaking documents, information collection requests, and guidance manuals. The contractor shall provide written outputs at an appropriate level for the intended audience. (See Contract PWS C.5.)

9. Provide briefings on statistical issues

The contractor shall provide briefings to the EPA on statistical methodology, recommendations, and conclusions of work. The structure and form of the briefings shall be provided by or approved in advance by the EPA PO or the EPA WAM. The contractor shall provide briefings that can be understood by the intended audience, which will include EPA personnel (e.g., statisticians, engineers, managers). The contractor also shall attend meetings with EPA personnel and shall provide explanations and recommendations pertaining to the other service areas. Most of the meetings will be conducted through teleconferences, but local travel to EPA and/or public meeting locations may be required ten times a year. (See contract PWS C.6) If the meetings require non-local travel for the contractor personnel, the work assignment will be amended to add the travel and meeting requirement.

## **VI. Deliverables and Schedule**

<u>Task</u>	<u>Deliverable</u>	<u>Date</u>
1.	Prepare work plan	Due 15 calendar days after the effective date of the WA.
2.	Develop QAPP for individual tasks involving the generation, analysis, or use of environmental data.	1-2 QAPPs shall be developed for specific requirements as requested by the WAM through technical direction.
3.	Prepare Contract Status Updates	Contract status updates (teleconferences on technical progress) on a biweekly or monthly basis. EPA WAM to coordinate date and time with contractor.
4 - 9	Provide statistical analysis, statistical data collection designs, statistical review and comment, and guidance.	To be determined via technical direction.

## **VII. TRAVEL**

Any non-local travel directly chargeable to this work assignment shall be submitted and approved by the Project Officer prior to the travel. It is expected that the EPA WAM will request the contractor to participate in four meetings in Washington, DC during the period of performance in support of the tasks in Section V.

## **VIII. OTHER REQUIREMENTS**

The contractor shall provide written notification to the contracting officer, project officer, and work assignment manager when 75 percent of the hours and/or funds have been spent on this work assignment.

### **Work Assignment 3-3 Statement of Work**

**TITLE:**       **Statistical and Technical Support for Fish Advisory Analyses**

**Period of Performance:** June 1, 2013 through May 31, 2014

**Work Assignment Manager (WAM):**

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**Contract PWS:** Sections A, B.7, C. 1, C.4, C.5

#### **1.       Background and Purpose**

This work assignment (WA) provides for statistical and technical support related to the EPA projects titled Updating and Revising National Fish Consumption Rates (FCR), updating the reports and manuscripts titled Time-Trends in NHANES Blood Mercury and PFOS Data, and developing national guidance documents providing recommended approaches to conducting surveys to assess the awareness and effectiveness of local fish consumption advisories in rural areas and conducting fish and wildlife consumption surveys.



## **2. Tasks**

### **Task 1: Develop a Work Plan**

The contractor shall prepare a work plan and cost estimate (by task) for the tasks in this WA, including proposed level of effort, budget, and a schedule of tasks and submit it to the Contracting Officer (CO), Project Officer (PO), and Work Assignment Manager (WAM) in accordance with contract requirements. If needed, the contractor shall hold a conference call with the WAM prior to submission of the work plan to discuss any issues needing clarification related to the work plan.

### **Task 2: Develop a QAPP**

The contractor shall develop a Quality Assurance Project Plan (QAPP) to ensure the accuracy and completeness in transcribing and reporting data. The contractor shall ensure and document all activities in accordance with Agency guidance and in compliance with EPA metadata standards. The QAPP shall address project objectives, organization, responsibilities, secondary data sources, data reporting, data reduction, and data validation to ensure accuracy in data transcription. The contractor shall follow EPA's guidance on developing QAPPs, which can be found at [www.epa.gov/quality](http://www.epa.gov/quality).

The QAPP will be approved by the contractor's QA/QC officer and the EPA/OST QA/QC officers and WAM prior to the initiation of data collection and analysis. All deliverables shall include a short 1-2 page summary describing compliance with the QAPP. The contractor shall ensure: (1) the products developed under this work assignment comply with the Information Quality Guidelines (IQG) and (2) the checklist is completed for each deliverable, with all supporting documentation for each checklist item, before the final materials are produced.

### **Task 3: Statistical Support**

The contractor shall provide support for performing statistical analyses related to assessing and developing updated Fish Consumption Rates (FCRs) as a continuation of work initiated as part of the previous WA 2-3 under the same contract.

Specific areas of support include:

- Participating in monthly one hour meetings to discuss with EPA all elements pertaining to updating FCRs.
- Providing meeting summaries.
- Conducting statistical analyses as directed by the WAM related to updating national and regional FCRs. Databases such as NHANES (and similar) will be used for conducting the analyses.
  - The contractor shall include trophic level assignments for all species included in the FCR analyses with added trophic level specific FCRs developed in a manner consistent with the 2000 Human Health Methodology for Developing Water Quality Criteria.
  - The contractor shall develop the methodology for conducting the statistical analyses in support of FCRs as required under the WA, including the habitat apportionment methodology and overall FCR methodology based on the National Cancer Institute approach to developing FCRs.

We estimate the contractor will participate in (by telephone) and provide summaries for 12 meetings, one per month through May, 2014.

#### Task 4: NHANES Blood/Mercury, PFOS and Arsenic Analysis

- Based on comments provided by the WAM and the NHANES 2011-12 survey cycle, the contractor shall revise and update the document and manuscripts titled Time-Trends in NHANES Blood Mercury and Time-Trends in NHANES PFOS and Arsenic Data (developed by the contractor under previous work assignment 2-3). The contractor shall expand the analyses to include regional and coastal county analysis.

#### Task 5: Development of Guidance on Assessing the Effectiveness of Rural Advisories

As a continuation of work initiated as part of the previous WA 2-3 under the same contract, the contractor shall develop national guidance on assessing the awareness and effectiveness of local fish consumption advisories for use by states, tribes and others responsible for issuing and managing advisories.

Specific areas of support include:

- Based on the survey instrument titled Recommended Study Design for a Survey to Evaluate the Effectiveness of Mississippi Delta Fish Advisories and the final report

titled Survey Evaluating Effectiveness of Mississippi Delta Fish Advisories (see <http://water.epa.gov/scitech/swguidance/fishshellfish/fishadvisories/technical.cfn>), the contractor shall develop a national guidance document providing a recommended approach to conducting surveys to assess the awareness and effectiveness of local fish consumption advisories in rural areas of the U.S.

- Telephonic meetings with EPA will be organized by the contractor and held monthly.
- The contractor shall provide written summaries for each meeting. We estimate the contractor will participate in and provide summaries for 12 meetings, one per month through May, 2014.

#### Task 6: Development of Guidance on Conducting Fish Consumption Surveys

The contractor shall develop national guidance on conducting fish consumption surveys for use by states, tribes and others responsible for issuing and managing advisories and WQS programs.

Specific areas of support include:

- Revise the current EPA guidance titled Guidance for Conducting Fish and Wildlife Surveys (see [http://water.epa.gov/scitech/swguidance/fishshellfish/outreach/upload/1999\\_11\\_05\\_fish\\_fishguid.pdf](http://water.epa.gov/scitech/swguidance/fishshellfish/outreach/upload/1999_11_05_fish_fishguid.pdf)). The contractor shall develop a revised national guidance document providing a recommended approach to conducting local and regional surveys to determine fish consumption rates for various populations and geographic areas of the U.S. Based on the most current science, public health policies and directions from the WAM, the revised guidance will include revisions to all topics addressed in the current guidance as well as detailed data needs and statistical procedures required for calculating fish consumption rates. The revised guidance will include a default model fish consumption survey useful by states and tribes for gathering local fish consumption data and information. The guidance will include procedures for modifying the default survey instrument to meet local needs.
- Telephonic workgroup meeting will be organized by the contractor and held monthly.
  - The contractor shall provide written summaries for each meeting. We estimate the contractor will participate in and provide summaries for 12 meetings, one per month through May, 2014.

### **3. Schedule and Deliverables**

All final reports shall be provided to the WAM in electronic and paper formats, including one (1) CD per deliverable provided in PDF format; one (1) CD per deliverable in original software (all software shall be cleared by the WAM prior to use); one (1) camera-ready copy of each product (unless otherwise requested); and six (6) bound paper copies of all reports. All documents shall be web-ready format and 508 compliant. Meeting summaries shall be provided via email to the WAM.

The contractor shall certify in writing for each product that all electronic and paper copies are identical mirror images.

#### Task 1: Work Plan

**Deliverable 1:** The work plan shall be submitted electronically in MS WORD and in hard copy to the WAM, AWAM, and CO in accordance with the contract requirements.

#### Task 2: QAPP

**Deliverable 2:** Draft QAPP will be due 2 weeks from WP approval.

**Deliverable 3:** Final QAPP will be due 2 weeks before WA completion. The IQG checklist shall be due at the completion of each final deliverable required by the WA.

#### Task 3: Statistical Support

**Deliverable 4:** Summaries of the monthly meetings will be provided within 24 hours of each meeting, or 8 working hours. If a meeting is held on a Friday, the summary will be provided on Monday.

**Deliverable 5:** Individual analyses will be submitted in a form and time period as agreed to by the contractor and WAM for each analysis.

#### Task 4: NHANES Blood/Mercury Analysis

**Deliverable 6:** Submit draft of the report and manuscript on Time-Trends in Blood Mercury Concentrations within 40 work days of publishing the relevant new NHANES data by CDC.

**Deliverable 7:** Submit a final report within 10 work days of receipt of WAM comments. The contractor shall provide copies of the final report as described above under Section 3 as well as one hard copy to the COR and to the CO.

#### Task 5: Development of Guidance on Assessing the Effectiveness of Rural Advisories

**Deliverable 8:** Summaries of the monthly meetings shall be provided within 24 hours of each meeting, or 8 working hours. If a meeting is held on a Friday, the summary will be provided on Monday.

**Deliverable 9:** Submit draft of report of guidance within 100 work days of receipt of approved work plan.

**Deliverable 10:** Submit a final report within 25 work days of receipt of WAM comments. The contractor shall provide copies of the final report as described above under Section 3 as well as one hard copy to the COR and to the CO.

#### Task 6: Development of Guidance on Conducting Fish Consumption Surveys

**Deliverable 11:** Summaries of the monthly meetings shall be provided within 24 hours of each meeting, or 8 working hours. If a meeting is held on a Friday, the summary will be provided on Monday.

**Deliverable 12:** Submit draft of report of guidance within 125 work days of receipt of approved work plan.

**Deliverable 13:** Submit a final report within 25 work days of receipt of WAM comments. The contractor shall provide copies of the final report as described above under Section 3 as well as one hard copy to the COR and to the CO.

## **4. Reporting Requirements**

The contractor Work Assignment Lead will maintain liaison with the WAM either by phone or via email weekly throughout the duration of the WA.

The contractor shall prepare monthly technical and financial progress reports, monitor the budget, monitor the schedule, and administer the WA through its completion. The monthly progress report will include technical and financial components. The report will state the progress made for the reporting period, including the percentage of the WA completed and a description of work accomplished to support the cost. Specific discussions about problems encountered, remedial actions taken, anticipated activity for the subsequent reporting period, and a schedule of deliverables for the upcoming month will be included. A list of outstanding actions awaiting authorization will also be included. The financial information will include monthly costs, cumulative costs, and hours worked for each employee within labor categories.

## **5. Notice Regarding Guidance Provided Under This Work Assignment**

Guidance is strictly limited to technical and analytical support. The contractor shall not engage in activities of an inherently governmental nature such as the following:

1. Formulation of Agency policy;
2. Selection of Agency priorities;
3. Development of Agency regulations.

**TITLE: WA 3-4 -- Statistical Support for Hydraulic Fracturing**

**Period of Performance: June 1, 2013 - May 31, 2014**

**Work Assignment Manager:**

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## **I. Background**

Work assignment #3-4 is a continuation of tasks described in work assignment #2-4.

EPA requires statistical support for a study on the potential impacts of hydraulic fracturing on water resources. EPA intends to report initial study results in late 2012 with follow up results to be reported in 2014.

In September 2010, EPA requested information from nine hydraulic fracturing service companies regarding their practices, including the location of all wells for which they provided hydraulic fracturing services during one year. (Details on the request may be found at <http://epa.gov/hfstudy>.) All nine companies provided information to EPA to assist in the study. EPA received a list of approximately 25,000 wells that were hydraulically fractured between 2009 and 2010 as well as the names of the well operators.

EPA chose to send a second information request for a subset of wells files received from the September 2010 request. To identify the wells for the second request, the list of operators was first sorted by those with the most wells to those with the fewest wells. EPA defined operators to be “large” if their combined number of wells accounted for the top 50% of wells on the list, “medium” if their combined wells accounted for the next 25% of wells on the list, or “small” if their wells were among the last 25% of wells on the list, and removed all operators with ten wells or less. Then, using a map from the U.S. Energy Information Administration showing all shale gas plays, EPA classified four different areas of the nation: East, South, Rocky Mountain (including California) and Other. To choose the nine companies that received the request, EPA randomly selected one “large” operator from each from the geographic areas, for a total of four “large” operators, and then randomly, and without geographic consideration, selected two “medium” and three “small” operators. Once the nine companies were identified, EPA used a computer algorithm that balanced geographic diversity and random selection within an operator’s list to select 350 wells as a representative sample. EPA sent the second information request in August 2011 to the nine companies. (Details on the request may be found at <http://epa.gov/hfstudy>.)

Much of the information provided in both the September 2010 and August 2011 responses to EPA’s requests have been designated as Confidential Business Information (CBI) under the Toxic Substances Control Act (TSCA). EPA is using the TSCA CBI rules for handling the data. The contractor already obtained clearance to work with TSCA CBI data submitted to EPA under WA #B-4 of this contract and prepared a Quality Assurance Project Plan (QAPP).

Under ERG contract number 68-C-02-095, EPA has engaged another firm to extract information from the paper and electronic files provided by hydraulic fracturing companies into a database. Therefore, the contractor shall be required to cooperate, coordinate, and/or exchange information with the other firm to complete the tasks under this work assignment. The EPA WAM will make arrangements for provision of information from one contractor to the other.



## **II. Purpose**

The contractor shall provide statistical support and expertise for analyses. Analyses may include evaluating data from companies, estimation of sample sizes and assistance in drawing samples, preparing briefings and outreach materials, and conducting other similar technical analyses that fall within the contract SOW.

Throughout this work assignment, the contractor shall provide draft and final reports to EPA in electronic and hard copy formats. The contractor shall discuss the computer file formats to be used for statistical analyses, word processing, spreadsheet, database and graphics with the EPA WAM prior to file preparation.

## **III. General Requirements**

In providing support under the tasks described in Section V, the contractor also shall adhere to the following general requirements:

### **1. Databases and Computer Programs (PWS B.4)**

The contractor shall design databases, computer algorithms, and programs that allow for efficient data analysis. The databases shall contain metadata describing the variables, the origin of the data (such as data from companies), and other relevant documentation. The contractor shall use software packages that are relevant to the particular statistical analysis, generally accepted by experts as being reliable for the statistical analysis, and allow for any necessary data modification. The programs shall identify the origin of the input data sets (e.g., version X supplied by EPA on a specific date).

### **2. Deliverables (PWS B.5)**

Each initial deliverable shall be provided to the EPA Work Assignment Manager (WAM) in draft form for review and comment. The contractor shall incorporate procedures to ensure that these drafts are reasonably free from errors and meet EPA's specifications before providing them to EPA. For example, drafts shall be reasonably free from errors generated by using inappropriate assumptions, inappropriate selection of data, logic problems in the computer programming, and incomplete documentation. The contractor shall incorporate EPA comments into revisions of the drafts.

Data shall be submitted in spreadsheets and corresponding databases. Data shall be formatted in such a way that facilitates ready querying with accurate results.

All deliverables shall be labeled with the name of the contractor, the EPA contract number, and the date the deliverable is submitted to EPA. (For example, a memorandum explaining the results of a statistical analysis shall be placed on company letterhead and the subject line shall include the phrase "EPA Contract EP-C-10-023".)

The contractor shall ensure that documentation is created using, or can be easily converted to, Agency standard software formats (e.g., Microsoft Office) to facilitate EPA use and review.

3. Confidential Business Information (PWS B.6)

The contractor will be provided with information by the EPA WAM. Some of the information provided by EPA will be Confidential Business Information (CBI). For information claimed as CBI under the Toxic Substances Control Act (TSCA), the contractor shall handle CBI under procedures specified in the approved CBI security plan, and 40 CFR Part 2 Subpart B, and in accordance with contract requirements and limitations (see Section H of the contract).

4. Internal Documentation (PWS B.8)

The contractor shall internally document all assumptions, data sources, databases, procedures, statistical analyses, and computer programming code so that results can be replicated even if the originating staff members are no longer available. The contractor shall provide copies of this internal documentation upon request by the EPA PO and the EPA WAM. For example, at the end of the contract, EPA may request all documentation related to ongoing litigation.

#### **IV. Scope of Work**

The EPA WAM will provide technical clarification regarding the tasks of the work assignment listed below through written technical directives. The contractor shall start work upon receipt of the work plan approval.

Task 1: Work plan

The contractor shall prepare a work plan for completing the tasks in this work assignment. The contractor shall conduct all work in a manner consistent with this performance work statement and with the Quality Assurance Project Plan (QAPP) prepared under WA #B-4 under this contract. In addition, the contractor shall document relevant QA activities in any deliverable.

For planning purposes, the contractor should attend a weekly conference call, one (1) hour in duration, to discuss progress on tasks. Up to two (2) contractor personnel are expected to attend the call.

Task 2: Assessment of representativeness

The contractor shall provide EPA with statistical options, including the benefits and limits, for extrapolating the results of the representative sample to the industry as a whole. For planning purposes, the contractor should propose up to five (5) options for extrapolating the results in a written report no longer than five (5) pages. The contractor should plan to perform up to three (3) revisions of the option selected by EPA.

### Task 3: Revised Sample Weights and Guidance (PWS C.1, C.5)

The contractor shall provide survey weights and statistical documentation on applying the survey weights to the data collected on 350 wells from the August 2011 request. When respondents identify particular circumstances that might affect the survey weights (e.g., eligibility) and statistical analyses, the contractor shall provide recommendations to EPA in handling the response. After the response deadline and EPA classifies the sample draw into appropriate categories (i.e., respondents, out-of-scope, non-respondent, etc.), the contractor shall provide draft survey weights that are adjusted for nonresponse and other factors. Because survey weight estimation is expected to be an iterative process, the contractor shall incorporate EPA comments and updated databases into revised versions of the weights and guidance. Each version of survey weights shall be provided in a spreadsheet using the project identifiers for each entity and a memorandum with a brief description of the calculations and changes from the previous version. For planning purposes, the contractor should expect two (2) revisions of the weights and guidance based on updated information. The contractor also shall participate in up to two (2) local meetings at EPA HQ (DC) to discuss survey results and response rates. Up to two (2) contractor personnel are expected at the meetings.

### Task 4: Survey Statistics Appendix (PWS C.5)

The contractor shall provide an outline, draft appendix, and final version of the appendix that describe the survey design, outcomes, and methodology for population estimation. The contractor shall incorporate the EPA WAM comments into revised versions. The final version shall be delivered in a format that can be easily incorporated into one of the main technical documents for the study.

### Task 5: Respond to Statistical Issues (PWS C.4)

Upon receipt of written technical direction, the contractor shall provide statistical review and comments on documents specific to hydraulic fracturing. These documents will be provided to the contractor by the EPA WAM. EPA may obtain these studies from sources such as OW, other EPA Offices, EPA Regions, States, other government agencies including OMB, industry reports, and professional journals. The contractor shall provide a preliminary assessment in an email message or memorandum within one week of receiving the document. The contractor shall provide in-depth review in detailed memoranda or reports. For planning purposes, the contractor should assume three (3) preliminary assessments and one in-depth review. The EPA WAM will provide technical direction to clarify the focus of the reviews.

#### Task 6: Miscellaneous Statistical Analyses and Consultation Services (PWS C.1)

The contractor shall provide up to five (5) additional statistical analyses, statistical review, and research relevant to hydraulic fracturing as specified in written technical directives. For budget estimation purposes, the contractor shall assume that two (2) activities under this task are very simple and that one (1) requires more in-depth analysis.

The contractor shall provide consultation on planned analyses, presentation of data appropriate for various audiences, and propose analyses to meet EPA's objectives throughout the performance period. For planning purposes, the contractor shall assume any consultation services will be provided during the weekly conference call and up to five (5) graphical representations of statistical results may be requested by the EPA WAM.

Upon receipt of written technical direction by the WAM, the contractor shall assist the EPA team reviewing the 334 unique well files by designing a random draw of 10% of these files that will be re-reviewed as a quality control step in that research process. The 10% random draw need not be more complicated than a pure random draw.

#### Task 7: Quality Assurance (PWS B.7)

The contractor shall conduct the work under this work assignment (#3-4) in a manner consistent with the Quality Assurance Project Plan (QAPP) prepared under WA #B-4 under this contract. The QAPP shall be revised annually on or before the date of the most recent approval. In addition, the contractor shall document relevant QA activities in any deliverable. For planning purposes, the contractor shall assume the QAPP will need to be revised up to one (1) time for this performance period.

## V. Deliverables and Project Schedule

<u>Task</u>	<u>Deliverable</u>	<u>Date</u>
1	Work plan	Due 15 calendar days from receipt of the Work Assignment.
2	Memorandum of options	Within 5 days of receipt of data from WAM.
3	Memoranda with revised survey weights	Revisions due within 1-4 work days as identified in technical direction, depending on extent of the revisions.
4	Statistics appendix - Outline	Two weeks after providing the first version of revised survey weights.
5	Final version with computer programs, database, flowcharts	Per technical direction to correspond to proposal record deadlines, whichever is earliest.
	Email or memoranda with recommendations for specific issues with respondents	1-4 work days as identified in technical direction, depending on complexity of the issue
	Statistics appendix – Drafts	One month after EPA accepts outline. Revisions within 3-10 work days as identified in technical direction, depending on complexity of the comments.
6	Email or memorandum with findings and recommendations	1-21 calendar days as specified in technical direction from the WAM. Revisions delivered in 1 to 14 calendar days as specified in technical direction.
7	Quality control design	5-14 days as identified in technical direction
	Revise Quality Assurance Project Plan	Annually, within one year of the last approved revision date

## **VII. TRAVEL**

The contractor should anticipate up to four local trips to EPA Headquarters for half-day meetings in support of the tasks in Section V. The EPA WAM will coordinate dates and times with the contractor .

## **VIII. OTHER REQUIREMENTS**

The contractor shall provide written notification to the contracting officer, project officer, and work assignment manager when 50 percent and 75 percent of the hours and/or funds have been spent on this work assignment.

Performance Work Statement  
Contract EP-C-10-023  
Work Assignment 3-6

**TITLE: Statistical Support for Steam Electric Effluent Guidelines**

**Period of Performance: June 1, 2013 through May 31, 2014**

**Work Assignment Manager (WAM):**

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**Alternate WAM:**

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**Mailing Address for both:**

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Washington, DC 20460

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6233P EPA West (Connecting Wing)  
1301 Constitution Ave, NW  
Washington, DC 20004

**A. BACKGROUND**

The steam electric power generating effluent limitations guidelines and standards (ELGs) apply to the electric power plants that generate electricity for distribution and sale from a process utilizing fossil-type fuel (coal, oil, or gas) or nuclear fuel in conjunction with a thermal cycle employing the steam-water system as the thermodynamic medium. The effluent guidelines are codified in the Code of Federal Regulations (CFR) at Title 40, Part 423 (40 CFR Part 423). EPA's most recent revisions to the effluent guidelines for this industry sector were promulgated in 1982 (see 47 Fed. Reg. 52290; November 19, 1982).

EPA first identified this industry as ranking high in discharge of toxic and nonconventional pollutant [U.S. EPA, 2005b] during its 2005 annual review of effluent guidelines as required in section 304 (m) of the Clean Water Act. Because of these findings, EPA initiated a more detailed study of this category to determine if the effluent guidelines should be revised. Upon completing the detailed study in 2009, EPA determined that the current regulations have not kept pace with the significant changes that have occurred in this industry since they were last revised in 1982. Thus, EPA determined that revising the current effluent guidelines for this industry is warranted.

To revise the current steam electric power generating effluent limitations guidelines, EPA determined that an Information Collection Request (ICR) was necessary. EPA published the first Federal Register notice about the questionnaires on October 29, 2009, and the second Federal Register notice about the questionnaires on March 9, 2010. The ICR was approved by Office of Management and Budget on May 20, 2010. The questionnaires were sent to the selected power plants in June 2010.

The proposed effluent guidelines for steam electric rule is scheduled to be signed and published for comments in April, 2013. EPA expects to finalize this rule by 2014.

## **B. PURPOSE**

The Contractor shall provide support for EPA in its evaluation of public comments and data submitted on the proposed rule. Specifically, the contractor will provide support in areas including statistical analysis of physical sampling data, review of the statistical comments, and statistical documentation to support the final rulemaking.

## **INFORMATION TO BE PROVIDED**

The contractor already has the detailed documentation of the statistical sample design of the questionnaires, sample frame database which does not contain CBI, a list of a sample draw with base weights, list of final survey weight, sampling database that was used to set the numeric limits for the proposed rulemaking under WA B-1, WA 1-6, and WA 2-6. The EPA WAM will provide the statistical comments (and additional sampling data) at the time of the technical direction.

## **C. GENERAL REQUIREMENTS**

In providing support under the tasks described in Section V, the contractor also shall adhere to the following general requirements:

### **Databases and Computer programs (PWS B.4)**

The contractor shall ensure that the updated databases, computer programs and the corresponding documentation developed under this contract are accessible to the EPA Project



Officer and the EPA WAM. The contractor shall use software packages that are relevant to particular statistical analysis, generally acceptable by experts as being reliable for the statistical analysis, and allow for any necessary data modification. The program shall identify the origin of the input data sets (e.g., version X supplied by EPA on specific date). (See PWS B.4).

### **Deliverable (PWS B.5)**

The contractor shall provide documentation in computer files, and in hardcopy, upon specific request. When appropriate (e.g., in a report rather than data listing), the contractor shall clearly specify the methods, procedures, considerations, assumptions, relevant citations, data sources, and data that support the results and any recommendations. The contractor also shall document alternative methods, procedures, and assumptions that the contractor considered in the statistical analysis. Further, the documentation shall be labeled with the name of the contractor and the EPA contract number. (For example, a memorandum explaining the results of a statistical analysis shall be placed on company letterhead and the subject line will include the phrase 'EPA Contract EP-C-10-023'.)

The contractor shall ensure that documentation is created using, or easily converted to, Agency standard software formats (e.g., Microsoft Office) to facilitate EPA use and review.

### **Confidential Business Information (PWS B.6)**

The contractor will be provided with technical information as determined by the EPA WAM who will also coordinate the transfer of all information. Some of the information provided by EPA will be Confidential Business Information (CBI). After receiving CBI, the contractor shall handle and analyze CBI under procedures specified in the approved contract CBI security plan and developed under WA B-1, and 40 CFR Part 2 Subpart B, and in accordance with contract requirements and limitations (see Section H of the contract).

### **Identification at Meetings (PWS C.6)**

At meetings with EPA, the contractor shall state that he/she represents a contractor working for EPA, and wear clear identification identifying his contractor affiliation. Further, the contractor shall prepare briefing materials that clearly indicate that they have been provided by a contractor working for EPA. (See contract PWS section C.6)

### **Workplan**

The contractor shall prepare a detailed work plan covering the tasks in this work assignment.

### **Quality Assurance Project Plan (QAPP)**

#### QA Project Plan Requirements

EPA policy requires that an approved Quality Assurance Project Plan (QAPP) be in place before any work begins that involves the collection, generation, evaluation, analysis or use of environmental data. This work assignment is a continuation of work previously performed by

the contractor under WA 1-6 and WA 2-6, and a QAPP was already prepared and approved by EPA to support work performed to support this project (dated 8/15/2011).

The tasks covered by this continuation work assignment are indicated in the Effluent Guidelines Development Process flowchart for the effluent guidelines development process (see flowchart in Attachment A, steps 7, 11, 15), which were also included in the precursor to this work assignment (i.e., WA 3-6). To ensure that all activities performed under this work assignment are compliant with EPA's quality system requirements, the Contractor shall adhere to the previously approved QAPP **and**:

- The Contractor shall review the previously approved QAPP to verify that the QAPP adequately documents how quality assurance (QA) and quality control (QC) will be applied to all activities to be performed under this work assignment, including the new steps in the effluent guidelines development process listed above. As part of this review, the Contractor shall also verify that existing QAPP content (e.g., organizational charts, roles and responsibilities, QA/QC procedures, checklists, SOPs, etc.) are still appropriate for the work to be performed under this work assignment for previously identified steps in the effluent guidelines process that will continue to be supported under this work assignment. In addition, the contractor shall verify that the QAPP:
  - Addresses all activities involving the **generation** (including field studies, laboratory studies, and modeling output), **collection** (including surveys, literature searches, and third party data), **evaluation** (including data inspection, review, assessment, and validation), **analysis** (including statistical, engineering, and economic analysis and testing, evaluation, and validation of methods and models) **and use of data** to support EPA decisions, regulations, policy, publications or tools (including effluent guidelines, methods, criteria, standards, environmental assessments, and models, tools, or reports disseminated by EPA to assist other organizations in implementing environmental programs). Examples of data include, but are not limited to, wastewater sample analysis results, flow measurements or data, facility questionnaire data, economic data, use of models, secondary data (including sources and the acceptance criteria), any software and database management requirements and any other relevant work that might affect the quality of the data. Note that QAPPs are also required for the development or revision of models and software that support the generation, collection, evaluation, analysis or use of data. For example, when existing models are used as a tool to generate or evaluate data, the project QAPP must describe the model, how it will be used, and how the model output will be evaluated to ensure it meets the overall quality objectives for the project. However, development or revision of new models also must be supported by a QAPP that describes the objectives for the model, the quality criteria that will be applied to the model, and the procedures for evaluating whether the model meets those criteria.
  - Provides enough detail to clearly describe objectives of the project supported by the work assignment; the type of data to be collected, generated, or used under this work assignment to support the project objectives; the quality objectives needed to ensure that these will support the project objectives; and the quality assurance and quality control activities to be performed to ensure that any results obtained are documented and are of the type, quality, transparency, and reproducibility needed.

- Includes specific performance criteria and measures that will be used to verify that data generated, collected or used in this work assignment meet those criteria. If a database or other electronic tool (e.g., model, spreadsheet, etc.) will be created for the project, the QAPP must describe how the database or electronic tool will be documented (e.g., data element dictionary, user manual, SOP, or other means appropriate for the project), the controls to ensure accurate data entry (when data from another source are manually entered into the database), data transfer (when data are transferred from one electronic medium to another), or data merging (when data from multiple databases or electronic media are merged into a single database).
- Explicitly references tools, such as SOPs, checklists, and guidelines that the contractor will use in the project to document data quality. The QAPP must include the tools as attachments for EPA's review and acceptance.
- Addresses the following “general questions that are applicable to all QAPPs that support EAD effluent guidelines projects”:
  - What is the objective/goal of this effort?
  - What are the roles and responsibilities of staff who will support this project, and how do they relate to the specific key steps?
  - What training and competency requirements are necessary for key personnel that will support the project?
  - If models will be used to support the project, what are these models, why have they been selected, and how will they be validated, documented, and used?
  - What are the SOPs, tools and checklists that will be used?
- If **minor** changes are needed to the existing QAPP, the Contractor shall submit a revised QAPP to EPA within 10 days after submittal of the workplan. This revised QAPP shall include a version history page that summarizes the changes made. The Contractor also shall provide EPA with copies of any modified SOPs or checklists. EPA will review the revised QAPP and provide the Contractor with written approval or comments within 15 days of receiving the Contractor's submission. The Contractor shall revise the submitted QAPP within 7 days of receipt, unless otherwise instructed by the EPA WAM.
- If **major** changes are needed to the existing QAPP, the Contractor shall submit a revised QAPP to EPA within 15 days after submittal of the work plan. When preparing this revised version, the Contractor shall ensure that it is written in an active voice and shall include a version history page that summarizes changes made. The Contractor also shall provide EPA with copies of any modified SOPs or checklists. EPA will review the revised QAPP and provide the Contractor with written approval or comments within 15 days of receiving the Contractor's submission. The Contractor shall revise the submitted QAPP within 10 days of receipt, unless otherwise instructed by the EPA WAM.
- **Under no circumstances shall work that involves the generation, collection, evaluation, analysis, or use of environmental data be performed without an approved QAPP in place 50 days after submission of the Contractor's work plan.**
- Under no circumstances shall field sampling or laboratory analysis activities be conducted prior to receipt of an approved work plan.
- Any non-sampling/non-analytical work that involves the generation, collection, evaluation, analysis, or use of environmental data that is initiated prior to approval of the Contractor's QAPP must be performed in accordance with the approved QAPP. (The QAPP requirements

must be applied retroactively to this period that lasts no more than 50 days from submission of the Contractor's work plan.).

#### Data Quality Act/Information Quality Guidelines Requirements

The Data Quality Act (also known as the Information Quality Act) requires EPA to ensure that influential information disseminated by the Agency is sufficiently transparent in terms of data and methods of analysis that the information is capable of being substantially reproduced. To support compliance with these data transparency/data reproducibility requirements, EPA plans to include QAPPs as part of any rulemaking record documentation to be made available to the public. The Contractor may claim information in QAPPs as confidential; if the Contractor chooses to do so, the Contractor shall submit a sanitized (i.e., public) version and an unsanitized (i.e., confidential) version at the time the QAPP is submitted for approval by EPA. The sanitized version will be included in the public docket for the applicable rulemaking (or other docket or record), and the unsanitized version will be included in a non-public (i.e., confidential) portion of the docket (or record).

Information contained in the approved QAPP must be transparent and reproducible and meet the requirements of the Data Quality Act for influential information. EPA's Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity, of Information Disseminated by the Environmental Protection Agency (EPA/260R-02-008, October 2002), referred to as "EPA's Information Quality Guidelines," describe EPA procedures for meeting Data Quality Act requirements. Section 6.3 of EPA's Information Quality Guidelines indicate that "especially rigorous robustness checks" should be applied in circumstances where quality-related information cannot be disclosed due to confidentiality issues. Where applicable, the Contractor should indicate which results were obtained using the tools (SOPs, checklists, and guidelines) that the Contractor designates as confidential so that the EPA WAM can easily identify the areas that will require rigorous robustness checks and document that those checks have been performed. At the discretion of the EPA WAM, the Contractor may be requested to prepare pre-dissemination review checklist as described in Section 5.5 of the Office of Water Quality Management Plan, February 2009. If this is required, the EPA WAM will notify the Contractor through written technical direction.

#### Additional QA Documentation Required

In addition to the QAPP requirements described above, all major deliverables (e.g., Technical Support Documents, Study Reports, Study Plans, etc.) produced by the Contractor under this work assignment must include a discussion of the QA/QC activities that were or will be performed to support the deliverable. For example, a Technical Support Document or Study Report must include a clear discussion of the quality management strategies that were employed to control and document the quality of data generated and used.

The contractor also shall provide EPA with monthly reports of QA activities performed during implementation of this work assignment. These monthly QA reports shall identify QA activities performed to support implementation of this work assignment, problems encountered, deviations from the QAPP, and corrective actions taken. If desired, the contractor may include this as a part of the contract-required monthly financial/technical progress report.

## **D. Statistical Support**

The EPA WAM will provide technical clarification/directives regarding the tasks of the work assignment listed below through written technical directives.

### **Task 1: Statistical Analyses of Data from Physical Sampling (PWS C.2)**

The contractor shall perform statistical analysis to assess wastewater concentrations from power plants and related variables. The data supporting the final rule will include some, or all, of the data that the contractor used in supporting the proposed rule. In addition, the EPA WAM will provide access to data collected since the proposal. It is expected that the contractor will continue to use and modify the computer programs developed for the proposed rule in analyzing the data specified by the EPA WAM. In support of the final rule, the contractor shall provide:

- **Meeting:** The contractor shall participate in meetings with EPA to discuss objectives and approaches. (The EPA WAM will coordinate with the contractor and project team members to determine meeting times.) Within three business days of each meeting, the contractor shall provide a short memorandum describing EPA's objectives and statistical considerations addressed at the meeting. The contractor shall assume that there will be two meetings.
- **Data Quality:** The contractor shall evaluate the data quality and integrity for additional sampling data since the proposal. The contractor shall identify outliers and questionable data by reviewing data listings and summaries, applying statistical methods, and using graphical methods. The contractor also shall review the data for missing values, censoring patterns, and appropriate units of measure (e.g., milligrams/liter). The contractor shall immediately notify the EPA WAM of any deficiencies and/or concerns about the data quality, integrity, and completeness that require EPA resolution.
- **Methodologies:** The contractor shall provide memoranda describing and evaluating the appropriateness of various statistical methodologies for analyzing the sampling data. With the results of the statistical analyses, the contractor shall provide memoranda that clearly specify the methods, procedures, assumptions, relevant citations, data sources, and data that support the results and recommendations. The contractor also shall document alternative methods, procedures, and assumptions that the contractor considered in the statistical analysis. For all memoranda, the contractor shall provide revisions that incorporate comments from the EPA WAM.
- **Programs and Databases:** The contractor shall provide summary statistics, percentile estimates, graphical analyses, diagnostic evaluations of estimates, and assessment of the variability of the data. The contractor shall provide the statistical programs and databases upon request. The contractor also shall provide appropriate documentation that will show the relationship between the programs and databases (e.g., flowcharts).

### **Task 2: Statistical Review of Documents (PWS C.4)**

The Contractor shall provide statistical review and comments on documents specific to Steam Electric. These documents will be provided to the Contractor by the EPA WAM. EPA may obtain these documents from sources such as OW, other EPA Offices, EPA Regions, States, other government agencies including OMB, industry reports, and professional journals. The EPA WAM will also provide written technical direction with regard to the focus of the reviews. The contractor shall provide a preliminary assessment in an email message or memorandum within 5 business days after receiving the documents. The final in-depth review in memoranda or reports shall be provided by the contractor within 1 to 3 weeks after receiving the written technical direction.

### **Task 3: Record Materials (PWS B.8, C.5)**

The contractor shall provide between 3-5 written reports and documentation suitable for the final rulemaking record, with regard to the data, methods, and conclusions pertinent to the other items under this Statistical Support, in response to the written technical direction of the EPA WAM. The contractor shall provide public documents (e.g., memoranda explaining the results of a statistical analysis) in a format acceptable to the regulations.gov website (e.g., Section 508 compliant pdf files). The contractor also shall provide CBI materials in a format specified by the EPA WAM. The contractor also shall provide an index for the record documents. The contractor should assume there will be two record documents.

### **Task 4: Miscellaneous Statistical Analyses (PWS C.1)**

The contractor shall provide additional statistical analyses, statistical review, and research relevant to steam electric project as specified by the EPA WAM in written technical directives. With the results of the statistical analyses, the contractor shall provide memoranda that clearly specify the methods, procedures, assumptions, relevant citations, data sources, and data that support the results and recommendations. The contractor also shall document alternative methods, procedures, and assumptions that the contractor considered in the statistical analysis. For all memoranda and other materials, the contractor shall provide revisions that incorporate revised databases and comments from the EPA WAM.

## E. Deliverables and Project Schedule

Task	Deliverable transmitted by email or file exchange	Date
General Requirement	Work plan	Due 15 days following receipt of Work Assignment.
Task 1 (Statistical Analyses of Data from Physical Sampling)	Meeting, teleconferences, and email	As necessary. Meeting notes within 3 business days.
	Data Quality	Within 1-3 business day after the contractor identifies a data issues.
	Methodologies	1 <sup>st</sup> draft one months after receiving data. Other drafts per technical direction.
	Programs and databases	5 business days after EPA determines that no additional revisions to the data analyses will be required
Task 2 (Statistical Review of Documents)	Preliminary assessment	Due 5-7 business days of receiving document s to revive provided by the EPA WAM
	Final review	Within 1 to 3 weeks after receiving written technical direction (deadline depends on the complexity of the request). Revisions within 1 to 7 business days as specified in technical direction.
Task 3 (Record Materials)	Record Materials and index	Exact dates to be specified in written technical direction.
Task 4 (Miscellaneous Statistical Analyses)	Draft Analyses	Within 1 to 3 weeks after receiving written technical direction (deadline depends on the complexity of the request)
	Final Version	Within 5 business days of receiving EPA comments

## F. TRAVEL

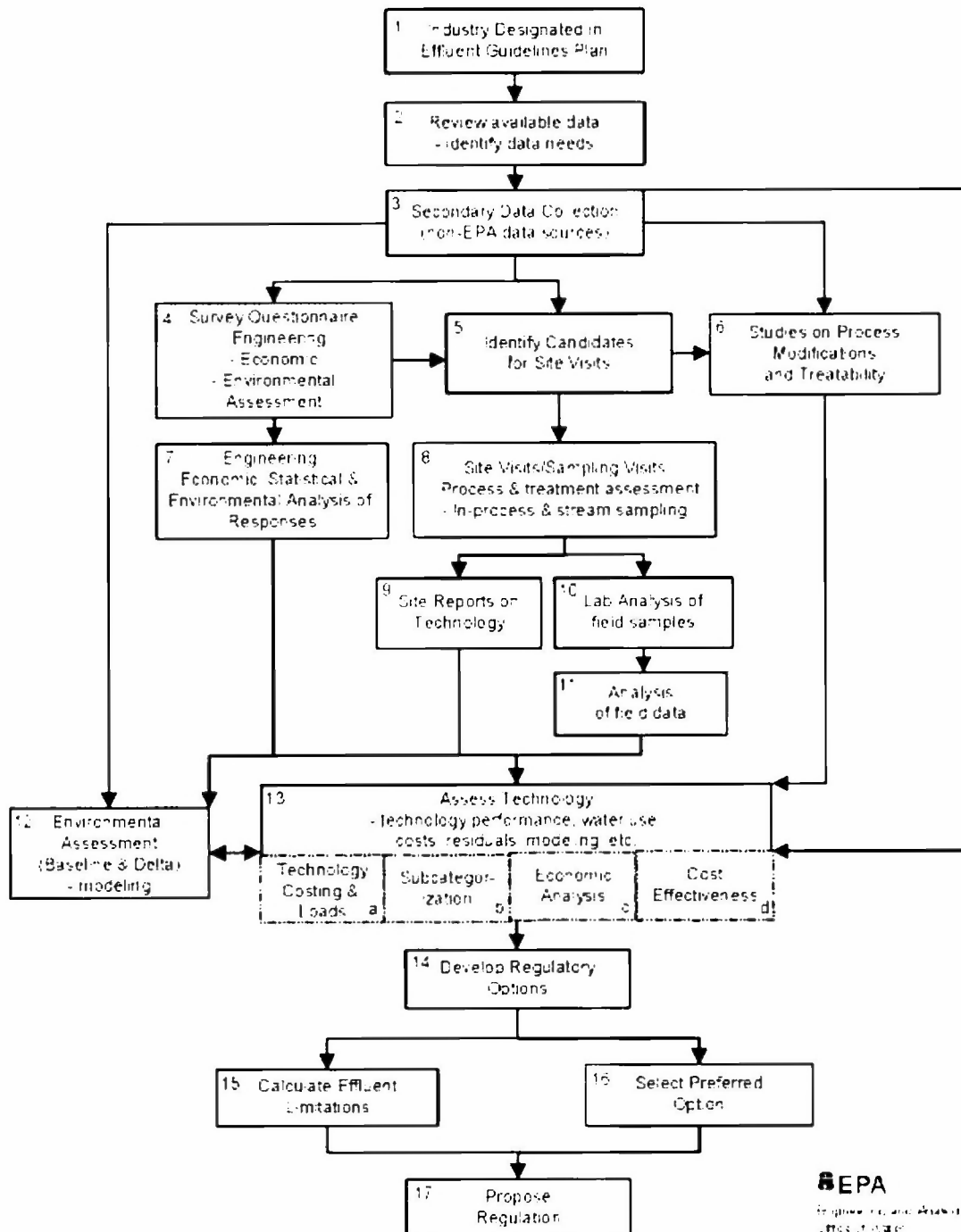
The contractor shall attend two meetings at EPA Headquarters. Any non-local travel directly chargeable to this work assignment shall be submitted and approved by the Project Officer prior to the travel.

## G. OTHER REQUIREMENTS

The contractor shall provide written notification to the contracting officer, project officer, and work assignment manager when 75 percent of the hours and/or funds have been spent on this work assignment.

**Attachment A**  
**Effluent Guidelines Process Flowchart & QA Questions to be Asked at Each Step of the Process**

**Effluent Guidelines Development Process**



U.S. Environmental Protection Agency

**EPA**  
 Engineering and Analysis Systems  
 Office of Water  
 October 2007



Performance Work Statement  
Contract EP-C-10-023  
Work Assignment 4-1

**TITLE: Quick Response Statistical Analysis Support**

**Period of Performance: June 1, 2014 through May 31, 2015**

**Work Assignment Contracting Officer's Representative:**

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**Overnight Courier Address for both:**

U.S. EPA  
6231B EPA West (Connecting Wing)  
1301 Constitution Avenue, NW  
Washington, DC 20004

## **I. BACKGROUND**

In order to fulfill its responsibilities within the Office of Water (OW), the Engineering and Analysis Division (EAD) is required to provide statistical analysis support for the promulgation of effluent guidelines, sewage sludge disposal regulations, water pollution control planning and management, water quality monitoring and analysis, determination of water quality criteria and EPA's toxic pollutant control strategy. The EAD also supports the Office of Science and Technology's (OST) interaction with other offices within OW and EPA in areas such as development and analysis of regulatory options and environmental research methodology. To effectively contribute to the execution of these responsibilities, the EAD and other OW statisticians must analyze large quantities of data. The magnitude of these responsibilities in

rapidly changing regulatory requirements makes it necessary for the EAD and OW to have a contractor with quick response capability to provide statistical analysis support services.

## **II. PURPOSE**

The contractor shall provide quick-response statistical analysis support for OW initiatives. The contractor shall provide support in areas including statistical analysis, statistical design of data collections, statistical review and comment, and statistical documentation.

The Contractor shall provide database maintenance activities on databases used in statistical analyses for on-going regulatory activities.

## **III. INFORMATION TO BE PROVIDED**

Data and supporting documentation will be provided to the contractor as required by the EPA Work Assignment Manager (WAM). This documentation will include survey data from specific industries, documentation from existing Agency databases, Agency technical support documents and written comments received by the Agency on proposed guidelines and standards.

The contractor will be provided with technical information as determined by the EPA WAM who will also coordinate the transfer of all information. Some of the information provided by EPA will be Confidential Business Information (CBI). The contractor shall handle CBI under procedures specified in an approved contract CBI security plan and 40 CFR Part 2 Subpart B, and in accordance with contract requirements and limitations. The contractor shall analyze CBI in accordance with contract requirements and limitations.

## **IV. GENERAL REQUIREMENTS**

In providing support under the tasks described in Section V, the contractor also shall adhere to the following general requirements:

### **1. Databases and Computer Programs**

The contractor shall design databases, computer algorithms, and programs that allow for efficient data analysis.

The databases shall contain metadata describing the variables, the origin of the data (e.g., EPA surveys), and other relevant documentation. The contractor shall incorporate data from multiple file formats into a single, logical database structure (e.g., a single SAS database with the same variable names used for similar data elements present in Excel, csv, and ASCII files

provided from different facilities). Because the Agency uses its mainframe (IBM z/OS) computer for version control of project databases, the contractor shall access the files using host-on-demand procedures described at <http://cfpub.epa.gov/ntsd/index.cfm?fuseaction=hod.main>.

The contractor shall use software packages that are relevant to the particular statistical analysis, generally accepted by experts as being reliable for the statistical analysis, and allow for any necessary data modification. The programs shall identify the origin of the input data sets (e.g., version X supplied by EPA on a specific date). (See contract PWS B.4)

## 2. Deliverables

Each initial deliverable shall be provided to the EPA WA COR in draft form for review and comment. The contractor shall incorporate procedures to ensure that these drafts are reasonably free from errors and meet EPA's specifications before providing them to EPA. For example, drafts shall be reasonably free from errors generated by using inappropriate assumptions, inappropriate selection of data, logic problems in the computer programming, and incomplete documentation. The contractor shall incorporate EPA comments into revisions of the drafts.

When appropriate (e.g., in a report rather than a data listing), the contractor shall clearly specify the methods, procedures, considerations, assumptions, relevant citations, data sources, and data that support the results and any recommendations. The contractor also shall document the reasons for selecting particular procedures, methodologies, and assumptions; and alternative methods, procedures, and assumptions that the contractor considered in the statistical analysis. Additionally, the documentation shall be labeled with the name of the contractor and the EPA contract number. (For example, a memorandum explaining the results of a statistical analysis shall be placed on company letterhead and the subject line will include the phrase "EPA Contract EP-C-10-023".)

The contractor shall ensure that documentation is created using, or can be easily converted to, Agency standard software formats (e.g., MicroSoft Office) to facilitate EPA use and review. In addition, to allow EPA to meet challenging deadlines, the contractor shall provide copies of interim databases, with periodic updates, rather than waiting until all of the data have been incorporated into the database. For example, when a database is being used for multiple purposes, EPA may assign database development to the statistical contractor and request interim versions to use for non-statistical evaluations. In another example, EPA may provide the statistical results and accompanying interim database to an industry trade group for assistance in identifying errors in the data. (See contract PWS B.5)

## 3. Identification at Meetings

At meetings with EPA, the contractor shall state that he/she represents a contractor working for EPA, and wear clear identification identifying his contractor affiliation. Further, the contractor shall prepare briefing materials that clearly indicate that they have been provided by a contractor working for EPA. (See contract PWS section C.6)

#### 4. Internal Documentation

The contractor shall internally document all assumptions, data sources, databases, procedures, statistical analyses, and computer programming code so that results can be replicated even if the originating staff members are no longer available. The contractor shall provide copies of this internal documentation upon request by the EPA Project Officer (PO) and the EPA WA COR. (See contract PWS section B.8)

### **V. Scope of Work**

The EPA WA COR will provide additional technical clarification/directives regarding the tasks of the work assignment listed below through written technical directives (except for tasks 1-3). Each initial deliverable shall be provided to the EPA WA COR in draft form for review and comment. The contractor shall incorporate procedures to ensure that these drafts completely document the methodologies, use appropriate assumptions and data, result from correct computer logic and algorithms; are accurate, complete, and as specified in the work assignment or written technical direction before providing them to the EPA. The contractor shall incorporate the EPA WA COR review comments into revisions of the drafts. All drafts and final reports shall be approved by the EPA WA COR.

#### 1. Workplan

The contractor shall prepare a detailed work plan covering the tasks in this work assignment. The contractor must reference the QMP in the work plan and state that it will be observed during the conduct of this work assignment.

#### 2. Quality Assurance

Most of the work under this work assignment are distinct one-time activities on unique EPA activities. For quality assurance of these activities, the contractor shall apply the EPA-approved contract quality management plan (QMP) to the specific activities. The relevant chapters in the QMP include chapters 7 – 11 (specifically, Chapter 7 (Documentation and Records), Chapter 8 (Computer Hardware and Software), Chapter 9 (Planning), Chapter 10 (Implementation of Work Processes), and Chapter 11 (Assessment and Response)). With respect to chapters 7 -11, it is EPA's expectation that the following QA/QC procedures, among others as specified in the QMP, will be followed:

- All study documentation and computer output will be kept by task in chronological sequence for quick tracing of past activities.
- All study documentation will be appropriately stored in a suitable location
- Contractor project director will be responsible for ensuring all work is done according to QMP.

If deemed necessary by EPA, the contractor shall develop 1-2 quality assurance project plans for quick response tasks.

### 3. Contract Overview and Status Updates

The contractor shall participate in a half-day meeting, if requested, at EPA Headquarters in DC to discuss the contract, CBI requirements, QA expectations, and the requirements in this performance work statement. No more than three contractors should attend. In addition, the contractor shall provide informal periodic status updates.

### 4. Analyze data using statistical procedures and methodologies

The contractor shall determine and apply appropriate statistical procedures and methodologies in analyzing and interpreting data provided by EPA. The data may include censored/truncated environmental data, data from chemical analyses of environmental samples (e.g., composite samples, soil samples), wastewater treatment system performance data, process and production evaluations, chemical analytical methods evaluations, surveys, and other sources. In providing this support, the contractor shall provide data summaries, memoranda, statistical programs, and associated databases. Also, the contractor shall participate in three half-day meetings at EPA Headquarters in DC. The contractor shall send 1-3 persons to the meetings. (See Contract PWS C.1.)

### 5. Statistically design data collections

The contractor shall provide statistical designs and sampling plans for data collection activities. The contractor shall recommend designs, plans, and formats that will be effective in obtaining the desired information and data elements; can be readily analyzed and interpreted; allow for statistical inference; adhere to EPA precision requirements and budget constraints; and other EPA objectives. EPA will secure any approvals necessary for data collections under the Paperwork Reduction Act and will be responsible for collecting the data. When providing meta-analysis support, the contractor shall develop criteria to select studies and data that meet EPA's statistical and quality objectives, search for relevant documents (e.g., from literature searches), select those that meet the criteria, and perform the data extraction. (See Contract PWS C.2.)

### 6. Evaluate data quality and integrity

The contractor shall evaluate data quality, integrity, and consistency. The contractor shall identify outliers and questionable data by reviewing data listings and summaries, applying statistical methods, and using graphical methods. The contractor also shall review the data for missing values, censoring patterns, and appropriate units of measure (e.g., milligrams/liter). To ensure integrity, the contractor shall develop databases using procedures that will insure completeness and accuracy required by EPA (e.g., that 99 percent or more of the database entries match the original submissions.) The contractor also shall assess the consistency between relational and mutually exclusive variables. (See Contract PWS C.3.) The procedures used will be consistent with the quality assurance as described in section 2 of the Scope of Work.

#### 7. Provide statistical review and comment

The contractor shall review and comment on documents to determine if they are statistically sound. Examples of documents include Agency draft documents, industry studies, technical reports, public comments on proposed regulations, journal articles, and Court briefs. The Agency will specify the depth of the review and comment, ranging from cursory reviews to detailed evaluations of each aspect of the statistical methodology and application to the data. The contractor shall prepare cogent, accurately written draft technical comments, critiques, and responses with relevant citations. The contractor also shall provide clearly written technical edits that improve statistical aspects of documents. (See Contract PWS C.4.)

#### 8. Prepare statistical documentation

The contractor shall provide reports and documentation consistent with good statistical practice, statistical literature, and Plain Language concepts (described at [www.plainlanguage.gov](http://www.plainlanguage.gov)). EPA will specify the type of documentation, intended purpose, and target audience (e.g., general public, statisticians). Documentation includes outlines, data displays, summary reports, development documents, fact sheets, presentation materials, rulemaking documents, information collection requests, and guidance manuals. The contractor shall provide written outputs at an appropriate level for the intended audience. (See Contract PWS C.5.)

#### 9. Provide briefings on statistical issues

The contractor shall provide briefings to the EPA on statistical methodology, recommendations, and conclusions of work. The structure and form of the briefings shall be provided by or approved in advance by the EPA CL COR or the EPA WA COR. The contractor shall provide briefings that can be understood by the intended audience, which will include EPA personnel (e.g., statisticians, engineers, managers). The contractor also shall attend meetings with EPA personnel and shall provide explanations and recommendations pertaining to the other service

areas. Most of the meetings will be conducted through teleconferences, but local travel to EPA and/or public meeting locations may be required ten times a year. (See contract PWS C.6) If the meetings require non-local travel for the contractor personnel, the work assignment will be amended to add the travel and meeting requirement.

## **VI. Deliverables and Schedule**

<u>Task</u>	<u>Deliverable</u>	<u>Date</u>
1.	Prepare work plan	Due 15 calendar days after the effective date of the WA.
2.	Apply Quality Management Plan to WA; develop QAPP for individual tasks	QMP always applies. 1-2 QAPPs shall be developed for specific requirements as requested by the WA COR through technical direction.
3.	Prepare Contract Status Updates	Contract status updates (teleconferences on technical progress) on a biweekly or monthly basis. EPA WA COR to coordinate date and time with contractor.
4 - 9	Provide statistical analysis, statistical data collection designs, statistical review and comment, and guidance.	To be determined via technical direction.

## **VII. TRAVEL**

Any non-local travel directly chargeable to this work assignment shall be submitted and approved by the Project Officer prior to the travel. It is expected that the EPA WA COR will request the contractor to participate in four meetings in Washington, DC during the period of performance in support of the tasks in Section V.

## **VIII. OTHER REQUIREMENTS**

The contractor shall provide written notification to the contracting officer, contract level contracting officer's representative, and work assignment contracting officer's representative when 75 percent of the hours and/or funds have been spent on this work assignment.

**TITLE: WA 4-4 -- Statistical Support for Hydraulic Fracturing**

**Period of Performance: June 1, 2014 – May 31, 2015**

**Work Assignment Contracting Officer's Representative:**

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## **I. Background**

Work assignment #4-4 is a continuation of tasks described in work assignments #2-4 and 3-4.

EPA requires statistical support for a study on the potential impacts of hydraulic fracturing on water resources. EPA intends to report draft study results in late 2014 with final results to be reported in 2016.

In September 2010, EPA requested information from nine hydraulic fracturing service companies regarding their practices, including the location of all wells for which they provided hydraulic fracturing services during one year. (Details on the request may be found at <http://epa.gov/hfstudy>.) All nine companies provided information to EPA to assist in the study. EPA received a list of approximately 25,000 wells that were hydraulically fractured between 2009 and 2010 as well as the names of the well operators.

In August 2011, EPA chose to send a second information request for a subset of well files received from the September 2010 request. (Details on the request may be found at <http://epa.gov/hfstudy>.) To identify the wells for the second request, the list of operators was first sorted by those with the most wells to those with the fewest wells. EPA defined operators to be “large” if their combined number of wells accounted for the top 50% of wells on the list, “medium” if their combined wells accounted for the next 25% of wells on the list, or “small” if their wells were among the last 25% of wells on the list, and removed all operators with ten wells or less. Then, using a map from the U.S. Energy Information Administration showing all shale gas plays, EPA classified four different areas of the nation: East, South, Rocky Mountain (including California) and Other. To choose the nine operators that received the request, EPA randomly selected one “large” operator from each from the geographic areas, for a total of four “large” operators, and then randomly, and without geographic consideration, selected two “medium” and three “small” operators. Once the nine companies were identified, EPA used a computer algorithm that balanced geographic diversity and random selection within an operator’s list to select 350 wells as a representative sample.

Much of the information provided in both the September 2010 and August 2011 responses to EPA’s requests have been designated as Confidential Business Information (CBI) under the Toxic Substances Control Act (TSCA). EPA is using the TSCA CBI rules for handling the data. The contractor already obtained clearance to work with TSCA CBI data submitted to EPA under WA #B-4 of this contract and prepared a Quality Assurance Project Plan (QAPP).

## **II. Purpose**

The contractor shall provide statistical support and expertise for analyses. Analyses may include evaluating data from companies, estimation of sample sizes and assistance in drawing samples, preparing briefings and outreach materials, and conducting other similar technical analyses that fall within the contract SOW.

Throughout this work assignment, the contractor shall provide draft and final reports to EPA in electronic and hard copy formats. The contractor shall discuss the computer file formats to be

used for statistical analyses, word processing, spreadsheet, database and graphics with the EPA WAM prior to file preparation.

### **III. General Requirements**

In providing support under the tasks described in Section V, the contractor also shall adhere to the following general requirements:

#### **1. Databases and Computer Programs (PWS B.4)**

The contractor shall design databases, computer algorithms, and programs that allow for efficient data analysis. The databases shall contain metadata describing the variables, the origin of the data (such as data from companies), and other relevant documentation. The contractor shall use software packages that are relevant to the particular statistical analysis, generally accepted by experts as being reliable for the statistical analysis, and allow for any necessary data modification. The programs shall identify the origin of the input data sets (e.g., version X supplied by EPA on a specific date).

#### **2. Deliverables (PWS B.5)**

Each initial deliverable shall be provided to the EPA Work Assignment Manager (WAM) in draft form for review and comment. The contractor shall incorporate procedures to ensure that these drafts are reasonably free from errors and meet EPA's specifications before providing them to EPA. For example, drafts shall be reasonably free from errors generated by using inappropriate assumptions, inappropriate selection of data, logic problems in the computer programming, and incomplete documentation. The contractor shall incorporate EPA comments into revisions of the drafts.

Data shall be submitted in spreadsheets and corresponding databases. Data shall be formatted in such a way that facilitates ready querying with accurate results.

All deliverables shall be labeled with the name of the contractor, the EPA contract number, and the date the deliverable is submitted to EPA. (For example, a memorandum explaining the results of a statistical analysis shall be placed on company letterhead and the subject line shall include the phrase "EPA Contract EP-C-10-023".)

The contractor shall ensure that documentation is created using, or can be easily converted to, Agency standard software formats (e.g., Microsoft Office) to facilitate EPA use and review.

#### **3. Confidential Business Information (PWS B.6)**

The contractor will be provided with information by the EPA WAM. Some of the information provided by EPA will be Confidential Business Information (CBI). For information claimed as CBI under the Toxic Substances Control Act (TSCA), the contractor shall handle CBI under procedures specified in the approved CBI security

plan, and 40 CFR Part 2 Subpart B, and in accordance with contract requirements and limitations (see Section H of the contract).

4. Internal Documentation (PWS B.8)

The contractor shall internally document all assumptions, data sources, databases, procedures, statistical analyses, and computer programming code so that results can be replicated even if the originating staff members are no longer available. The contractor shall provide copies of this internal documentation upon request by the EPA PO and the EPA WAM. For example, at the end of the contract, EPA may request all documentation related to ongoing litigation.

**IV. Scope of Work**

The EPA WAM will provide technical clarification regarding the tasks of the work assignment listed below through written technical directives. The contractor shall start work upon receipt of the work plan approval.

Task 1: Work plan

The contractor shall prepare a work plan for completing the tasks in this work assignment. The contractor shall conduct all work in a manner consistent with this performance work statement and with the Quality Assurance Project Plan (QAPP) prepared under WA #B-4 and updated under subsequent work assignment 1-4, 2-4, and 3-4 under this contract. In addition, the contractor shall document relevant QA activities in any deliverable.

For planning purposes, the contractor should attend a weekly conference call, one (1) hour in duration, to discuss progress on tasks. Up to two (2) contractor personnel are expected to attend the call.

Task 2: Revised Sample Weights and Guidance (PWS C.1, C.5)

The contractor shall provide survey weights and statistical documentation on applying the survey weights to the data collected on three hundred fifty (350) wells from the August 2011 request. When respondents identify particular circumstances that might affect the survey weights (e.g., eligibility) and statistical analyses, the contractor shall provide recommendations to EPA in handling the response. After the response deadline and EPA classifies the sample draw into appropriate categories (i.e., respondents, out-of-scope, non-respondent, etc.), the contractor shall provide draft survey weights that are adjusted for nonresponse and other factors. Because survey weight estimation is expected to be an iterative process, the contractor shall incorporate EPA comments and updated databases into revised versions of the weights and guidance. Each version of survey weights shall be provided in a spreadsheet using the project identifiers for each entity and a memorandum with a brief description of the calculations and changes from the previous version. For planning purposes, the contractor should expect two (2) revisions of the weights and guidance based on updated information.

The contractor shall evaluate quality assurance and error estimate for the datasets, upon receipt from the WAM. Westat shall prepare up to thirty-four (34) tables or figures using Microsoft Excel with captions to present the weighted data and associated confidence intervals. For planning purposes, each table and figure will have one revision.

#### Task 3: Survey Statistics Appendix (PWS C.5)

The contractor shall provide an outline, draft appendix, and final version of the appendix that describe the survey design, outcomes, and methodology for population estimation. The contractor shall incorporate the EPA WAM comments into revised versions. The final version shall be delivered in a format that can be easily incorporated into one of the main technical documents for the study.

#### Task 4: Respond to Statistical Issues (PWS C.4)

Upon receipt of written technical direction, the contractor shall provide statistical review and comments on documents specific to hydraulic fracturing. These documents will be provided to the contractor by the EPA WAM. EPA may obtain these studies from sources such as OW, other EPA Offices, EPA Regions, States, other government agencies including OMB, industry reports, and professional journals. The contractor shall provide a preliminary assessment in an email message or memorandum within one week of receiving the document. The contractor shall provide in-depth review in detailed memoranda or reports. For planning purposes, the contractor should assume three (3) preliminary assessments and one in-depth review. The EPA WAM will provide technical direction to clarify the focus of the reviews.

The contractor shall provide up to five (5) additional statistical analyses, statistical review, and research relevant to hydraulic fracturing as specified in written technical directives. For budget estimation purposes, the contractor shall assume that two (2) activities under this task are very simple and that one (1) requires more in-depth analysis.

The contractor shall provide consultation on planned analyses, presentation of data appropriate for various audiences, and propose analyses to meet EPA's objectives throughout the performance period. For planning purposes, the contractor shall assume any consultation services will be provided during the weekly conference call and up to five (5) graphical representations of statistical results may be requested by the EPA WAM.

#### Task 5: Quality Assurance (PWS B.7)

The contractor shall conduct the work under this work assignment (#2-4) in a manner consistent with the Quality Assurance Project Plan (QAPP) prepared under WA #B-4 under this contract. The QAPP shall be revised annually on or before the date of the most recent approval. In addition, the contractor shall document relevant QA activities in any deliverable. For planning purposes, the contractor shall assume the QAPP will need to be revised up to one (1) time for this performance period.

Upon request from the WAM, the contractor shall assist the EPA team reviewing the 334 unique well files by designing a random draw of 10% of these files that will be re-reviewed as a quality control step in that research process. The 10% random draw need not be more complicated than a pure random draw.

#### Task 6: Database Development

Westat shall provide technical support to assist EPA in development and quality assurance of a database and queries to analyze three hundred thirty four (334) oil and gas production well files. Database development tasks include appending the data tables, creating or updating data entry forms, and creating or updating data reports. In order to provide technical support, Westat shall have experience using Microsoft Access databases and programming query language with SQL. Westat will document and track all quality assurance efforts and evaluations performed by the team. Westat personnel are required to have approval to handle TSCA CBI data. Prior to receiving TSCA CBI approval, the contractor should become familiar with the well file review quality assurance project plan<sup>1</sup> and Chapter 3.4 of the Hydraulic Fracturing Study Progress Report<sup>2</sup>. The technical support will be provided to the EPA staff located in Denver, Colorado. For planning purposes, technical support may be needed through September 2014.

### **V. Deliverables and Project Schedule**

<b>Task</b>	<b>Deliverable</b>	<b>Date</b>
1	Work plan	Due 15 calendar days from receipt of the Work Assignment
2	Revision to sample weights	Within 7 calendar days from receipt of data from WAM
	Draft figures and tables with confidence intervals	Within 7 to 14 calendar days from receipt of data from WAM
	Final figures and tables with confidence intervals	Within 7 to 14 calendar days of receiving revisions to draft figures and tables
3	Outline of Statistics appendix	Two weeks after providing the first version of revised survey weights
	Draft statistics appendix	One month after EPA accepts outline
4	Email or memoranda with response to issue	1-21 calendar days as requested by the WAM
5	Annual revision of QAPP	Draft due by approval date (month, day) of previous version
6	Final database with all queries and quality assurance documentation	No later than December 31, 2014

<sup>1</sup> <http://www2.epa.gov/hfstudy/quality-assurance-integrity>

<sup>2</sup> <http://www2.epa.gov/hfstudy/study-potential-impacts-hydraulic-fracturing-drinking-water-resources-progress-report-0>

## **VII. TRAVEL**

The contractor should anticipate up to four local trips to EPA Headquarters for half-day meetings in support of the tasks in Section V. The EPA WAM will coordinate dates and times with the contractor. For planning purposes, the contractor shall anticipate two (2) staff to attend the meetings.

## **VIII. OTHER REQUIREMENTS**

The contractor shall provide written notification to the contracting officer, project officer, and work assignment manager when 50 percent and 75 percent of the hours and/or funds have been spent on this work assignment.

**Performance Work Statement  
Contract EP-C-10-023  
Work Assignment No. 4-07**

**Title:** Microbial Risk Assessment Support for Municipal Water Sustainability Assessments

**Period of Performance:** June 1, 2014 to May 31, 2015

**Work Assignment Contracting Officer's Representative (WA COR):**

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**A. BACKGROUND**

ORD's Safe and Sustainable Water Resources (SSWR) Program is the principle research lead seeking metrics and tools to compare the tradeoffs between economic, human health and environmental aspects of current and possible future municipal water services. Ultimately this research will provide the Office of Water (OW) with insight into what administrative/regulatory approaches could assist in this endeavor. Sentinel approaches and frameworks in this effort have been described in Sweden (Kärman et al. 2011) and Australia (Lundie et al. 2008). However, an important aspect previously overlooked in sustainability assessments is system resilience, both engineered and ecological, as human health and well-being are dependent upon ecosystems and their management needs to be sensitive to factors that over-stress ecosystems and human health (ecohealth), such as extreme wet and dry periods.

Changes in drinking water and wastewater management have typically resulted from new regulations, which focus on developing and implementing additions to the current treatment and delivery schemes; the so-called 'hard path' solutions. However, these additions are generally

undertaken in the absence of a system's view and result in transferring issues from one problem area to another. Future alternatives not only need to address the whole water services physical system, but also changes in human behavior, institutions and water governance to aid in the provision of more sustainable water services; i.e. include 'soft path' approaches. Furthermore, more sustainable systems will be based on resource recovery (water, energy nutrients etc.) within the municipal environment. Hence a range of metrics and tools need to be agreed upon to facilitate both soft and hard path solutions to identify "next-generation" sustainable municipal water systems as well as to identify possible regulatory/policy steps to facilitate this evolution.

## **B. PURPOSE**

The Contractor shall provide support in data analysis for contaminants with a particular focus on microbial risks. The Contractor shall develop and implement innovative statistical analysis, designs and sampling plans to enable microbial risk assessment (MRA) and chemical risk assessment (CRA) to be integrated within broader water service sustainability assessments. For this ORD-based research, EPA will require technical statistical support to interpret and aid in the development of further ORD research activities to address microbial and chemical contaminants across the whole water cycle as it relates to municipal water services, addressing traditional and novel options to manage drinking, recreational and reuse water risks.

## **INFORMATION TO BE PROVIDED**

The WA COR will:

- Provide system diagrams for the types of water systems under investigation.
- Identify initial lists of the key issues, current conditions, potential hazardous events, alternative interventions, and sources of information to support the investigation.
- Identify microbiological exposure datasets for statistical analysis and interpretation.
- Identify specific decision support frameworks (including software tools or logical processes) currently in use within EPA or other organizations for purposes of its sustainability assessment and management.

## **C. GENERAL REQUIREMENTS**

In providing support under the tasks described in the WA, the contractor also shall adhere to the following general requirements:

### **Databases and Computer programs (PWS B.4)**

The contractor shall ensure that the updated databases, computer programs and the corresponding documentation developed under this contract are accessible to the Contract Level Contracting Officer's Representative (CL COR) and the WA COR/ Alternate WA COR. The contractor shall use software packages that are relevant to particular statistical analysis, generally acceptable by experts as being reliable for the statistical analysis, and allow for any necessary data modification. The program shall identify the origin of the input data sets (e.g., version X supplied by EPA on specific date). (See PWS B.4).



**Deliverable (PWS B.5)**

The contractor shall provide documentation in computer files, and in hardcopy, upon specific request. When appropriate (e.g., in a report rather than data listing), the contractor shall clearly specify the methods, procedures, considerations, assumptions, relevant citations, data sources, and data that support the results and any recommendations. The contractor also shall document alternative methods, procedures, and assumptions that the contractor considered in the statistical analysis. Further, the documentation shall be labeled with the name of the contractor and the EPA contract number. (For example, a memorandum explaining the results of a statistical analysis shall be placed on company letterhead and the subject line will include the phrase 'EPA Contract EP-C-10-023'.)

The contractor shall ensure that documentation is created using, or easily converted to, Agency standard software formats (e.g., Microsoft Office) to facilitate EPA use and review.

**Confidential Business Information (PWS B.6)**

The contractor will be provided with technical information as determined by the WA COR who will also coordinate the transfer of all information. Some of the information provided by EPA will be Confidential Business Information (CBI). After receiving CBI, the contractor shall handle and analyze CBI under procedures specified in the approved contract CBI security plan and 40 CFR Part 2 Subpart B, and in accordance with contract requirements and limitations (see Section H of the contract).

**Identification at Meetings (PWS C.6)**

At meetings with EPA, the contractor shall state that he/she represents a contractor working for EPA, and wear clear identification identifying his contractor affiliation. Further, the contractor shall prepare briefing materials that clearly indicate that they have been provided by a contractor working for EPA. (See contract PWS section C.6)

**Work plan**

The contractor shall prepare a detailed work plan covering the tasks in this work assignment. The work plan shall outline, describe and include the technical approach, resources, timeline and due dates for deliverables, and a detailed cost estimate by task and staffing plan.

**Scope of Work Assignment**

As EPA undertakes this innovative engagement to address the municipal water system problem as described in Section A of this WA, and to demonstrate the broader Agency objective of systems thinking to sustainability, EPA staff will require contractual support under this Work Assignment to address the following:

- Identification of key sustainability indicator parameters that address various aspects of human health and wellbeing;
- Statistical modeling of inter-related impacts and feedback loops among current and potential water system options that address human health impacts; and

- Integration to derive appropriate metrics and tools for public health risk estimates suited to sustainability assessment of complete municipal water systems at a screening-level and finer scales of detail.

The expected outcome of this effort will be a set of reference microbial and chemical parameters to consider in comparison of the status quo to various novel water service options, key metrics and tools suited to screening-level and detailed comparisons and journal papers describing these statistical developments. As such, the contractor shall incorporate data from multiple sources (and formats) into a single database structure (compatible with SAS and CSV formats) for uploading into ORDs Life Cycle Assessment Research Center database.

Information to be developed in the work assignment includes:

- Appropriate statistical descriptions of current baseline concentrations for data that the contractors can justify as meeting certain levels of quality, integrity and consistency for pathogens/indicators and toxin residuals in source waters, drinking waters, recreational waters and for future scenarios, various grades of recovered non-potable waters and recovered nutrients, including those used in food and ornamental plant production.
- Brief ORD project scientists on the correct interpretation of the above occurrence and exposure data collected for representative pathogens and toxins, such as by probability density functions and mean point estimates under nominal and event conditions.
- Identification of the origin of all input datasets used for estimations of human health risk assessments and summation of appropriate dose-response curves used for selected contaminants via EPA-approved microbial and chemical risk assessment approaches.
- Provide all codes written in R, Mathematica, MathCad, Vensim, Excel and other software tools used to address the above microbial and chemical contaminant estimations and data in an agreed upon standard database structure to support System Dynamic and LCA-based models being developed within ORD for broader sustainability assessments of water systems.
- Sensitivity analyses to highlight critical control levels and places for pathogen and toxin control, reduction and impact mitigation, including narrative standards, numeric regulatory criteria, infrastructure improvements, innovative technologies, and other possible interventions by governmental or non-governmental organizations.
- Development of statistical approaches to address system resilience measures for microbial and chemical contaminants of current and alternative municipal water services, that address changing economic patterns, demographics, and climate.

### **Quality Assurance Project Plan:**

EPA Policy requires that an approved Quality Assurance Project Plan (QAPP) be in place before any work begins that involves the collection, generation, evaluation, analysis or use of environmental data. This work assignment is a continuation of work previously performed by the contractor under WA 3-7, and a QAPP was already prepared and approved by EPA to support work performed to support this project (dated December 27, 2012).

### **D. Statistical Support**

The WAM will provide technical clarification/directives regarding the tasks of the work assignment listed below through written technical directives.

### **Task 1: Statistical Analyses of Data - System Characterization (PWS C.2)**

The contractor shall provide appropriate quality datasets and statistical analyses so that key chemical and microbial health metrics can be estimated and statistical tools developed or comparisons between conventional water and wastewater municipal services (base-case) can be made against alternative water system types. Work previously performed by the contractor under WA 3-7 focused on alternative approaches to replacing septic systems in the Cape Cod area. These results have been included in a manuscript for publication. The work under this work assignment will build upon these initial efforts. In particular, work will focus on the integration of QMRA approaches within the LCA framework. Current LCA tools have limited human health metrics; this work will focus on merging QMRA with LCA so that one analysis can be done, providing a comprehensive sustainability analysis.

In addition, previous work under this work assignment began drafting an analysis of water systems which address system resilience and anti-fragility. Hence, the next phase of Task 1 will expand and formalize the drafted resilience analysis to include flooding, power outages, climate change, land use change, and economic measures in order to incorporate several potential future challenges to water systems. These analyses could include components such as: 1) composting urine-diversion toilets with local rainwater/greywater reuse; 2) dual piping within buildings for non-potable water that will be used for toilet flushing, clothes washing and garden irrigation, using local treated greywater treatment (rainwater assisted where available) and urine-diversion or blackwater only sewer for community-level energy cogen and heat recovery with municipal organic wastes and nutrient recovery; 3) developing stormwater/rainwater for community gardens and local infiltration, small-bore vacuum blackwater line within existing sewer for blackwater to local anaerobic energy recovery and potential fertilizer production, hence existing sewer transitions to a greywater/stormwater conveyance system with physico-chemical treatment, infiltration or direct river discharge until more localized greywater treatment and reuse is progressively installed, and/or 4) combinations of some the above.

Because of the iterative nature of research findings and selection of metrics, datasets and analyses between the contractor and EPA, Task 1 lends to regular discussion of findings with the Cincinnati-based EPA team, and joint journal publications to report out findings.

### **Task 2: Statistical Analysis of Data - Pathogen Exposure Risk Assessments (PWS C.5)**

The contractor shall participate in periodic teleconferences/video conferences with EPA so that appropriate statistical analysis of microbiological exposure data can be provided to EPA/ORD scientists working on SSWR projects. Work should begin which concentrates on the development of a tool which includes a quantitative approach for comparing the relative risk of pathogen exposure from various points in the water cycle and identification of the uncertainties in these estimates. Data could include molecular- and culture-based microbial source tracking, molecular and culture based occurrence studies, and/or human exposure data that may include

antibody results. If requested by the WA COR, draft meeting summaries shall be prepared, then finalized based on EPA comments and provided to the WA COR.

#### **E. Deliverables and Project Schedule**

<b>Task</b>	<b>Deliverable transmitted by email or file exchange</b>	<b>Date</b>
General requirement	Work plan	In accordance with contract requirements
Task 1: Statistical analyses of data-System characterization	Draft human health risk material suitable for amalgamating with other metrics in Open LCA and for initial System Dynamic tool development	Due 120 days after issuance of Work Assignment or as adjusted via technical direction by WA COR.
	Final human health risk material suitable for amalgamating with other metrics in Open LCA and for initial System Dynamic tool development	Due by May 31, 2015 or as adjusted via technical direction by the WA COR.
	Final resilience analysis of water systems	Due by September 30, 2014 or as adjusted via technical direction by the WA COR.
Task 2: Statistical analyses of data-Exposure Risk Assessments of Alternative Water Systems	Draft human health risk assessment of integrated water cycle, including selected alternative designs.	Due 120 days after issuance of Work Assignment or as adjusted via technical direction by WA COR.
	Final human health risk assessment of integrated water cycle, including selected alternative designs	Due by May 31, 2015 or as adjusted via technical direction by the WA COR.

#### **F. TRAVEL**

The contractor should plan on at least one site visit with collaborators at the EPA Cincinnati facility during this period of performance.

#### **G. OTHER REQUIREMENTS**

The contractor shall provide written notification to the CO, CL COR, and WA COR, and work assignment manager when 75 percent of the hours and/or funds have been spent on this work assignment.